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TABLE OF CONTENTS ON LAST PAGE OF READING.

THE AUTOMATIC INCREASE IN RUBBER CONSUMPTION.

THERE has been much agitation among the Eastern planters as to means and methods of increasing the use of rubber. This is very natural, under the circumstances, for plantation rubber bids fair to come on the market in tremendous volume within the next five years. In their desire to find new outlets for their product the planters have even considered the advisability of supplying manufacturers with a certain amount of crude rubber either at a price much below the market or entirely free of cost, to be used exclusively in the manufacture and marketing of entirely new articles not hitherto made of rubber.

While undoubtedly, either through these subsidized efforts to discover new ways of consuming rubber or through the natural competition of rival manufacturers, each anxious to add to his output, many new rubber articles will be manufactured and marketed during the next few years, still, in addition to this method of increasing rubber consumption, there is a process already going on which will tend naturally and automatically to increase the use of rubber—and that is the gradual reduction in the price of staple rubber articles to the general consumer.

Attention was called in the January issue of THE INDIA RUBBER WORLD to the reductions during the year 1913, amounting to 25 per cent., in the price of tires to the auto. owner—these reductions following an earlier lowering of price during the preceding year. Following this decrease in tire prices, the new lists of the rubber footwear companies, issued January 1, indicate a marked price reduction in their products. Elsewhere in this number there will be found a table showing in detail the extent to which footwear prices have been reduced from those of a year ago. The average of the items selected proves that present prices are nearly 12 per cent. under those of January, 1913. Another new price list, issued the first of this year by a prominent golf ball manufacturer, shows a drop of price amounting to 16 per cent. in that popular line of rubber goods.

These are just a few illustrations of the general tendency toward lower prices in manufactured rubber goods. And it is quite safe to assume that the increase in consumption will be considerably more than proportionate to the decrease in cost. Of course in some lines—belting and packing, for instance—decreased cost may not greatly increase consumption, as the volume of consumption depends on the necessities of trade rather than on the price of the article. But in other lines decreased price will mean a greatly extended use. In garden hose, for example, if the price of the ordinary garden or lawn hose could be cut to one-half its present figure it is safe to say that the increase in consumption would be vastly more than doubled, for many people would then be tempted to use hose who now for reasons of economy (probably a false economy) prefer to await the slow and uncertain operations of nature.

The planters, therefore, need not be greatly worried about the 300,000 tons of rubber which they expect to have ready for market five years from now, because, entirely apart from new rubber articles for general consumption, the old standard commodities, as their price is lowered, will increase vastly in popularity and come more and more into general use.

RUBBER LITERATURE.

IN the early days of the INDIA RUBBER WORLD those readers who found that drinking at its fount created in them a new thirst for literature on the topic which was part of their daily lives were constantly writing to the editor for a list of books which would prove the royal road to a complete knowledge of the rubber business.

Regretfully he would reply that he would be glad to give the names of the books wanted, but that he himself, during many years, had been searching unsuccessfully for the desired literature. Finally he was forced to write an editorial on "The Paucity of Rubber Literature," saying that inquirers would not soon find the books they were searching for because they did not exist. As matters stood at that time there was but one counsel to give, and that was given—to study in the school of experience. The books were few and of doubtful value and "as to finding books which will let them into the secrets of the business, such books do not now exist."

Seven years later the condition had changed so little that the long-suffering editor, answering the perennial and insistent question, told one correspondent that no books were to be had, but that he might consult the articles on "India Rubber" and "Caoutchouc" in the standard encyclopedias, after which, if he would talk with an intelligent operative from a good rubber factory, he might learn something about the rubber business. But if the disappointed seekers of those days are still interested in the theme they need not go athirst. The Sahara of that period is more like a Niagara today. There are books on every branch of the rubber business, and, it might be said, every twig of every branch. There are books on the gathering and coagulation of wild rubber; books on planting and cultivation and marketing; books on plantation management, on buying crude rubber and on selling it, on vulcanization, on every phase of manufacture, and on the testing of rubber goods after they are manufactured.

There are books on the botany of rubber plants, with monographs on *Hevea, Castilloa, Ficus* and *Funtumia*. There are books and still more books on the chemistry of rubber, and its laboratory companions. There are pamphlets and booklets and leaflets in stacks, telling of experiments in rubber culture in public gardens. There are directories of buyers and sellers, exporters and plantation syndicates. If the reader does not want his literature served up in the English language he may have it done in French, German, Portuguese, Dutch, Spanish or Japanese. He may regale himself with books on tires and toys and rubber hand stamps, books of statistics, of "shares" and of exhibitions. He can feast himself on all the courses, from the possibilities of the guayule shrub to why the ultimate consumer's rubber shoes part at the seams; and he can write down his reflections in a "Rubber Diary and Year Book." He can read picturesque and interesting tales of travel in lands where the rubber tree grows, from Borneo to Brooklyn. He can read "popular" books by writers who think that crude rubber is gutta percha, or he can give his mind to thoughtful little brochures on "Fungoid Diseases of *Funtumia*" or "Insurance of Rubber Trees." When he gets through with all of these, if he thinks another book on the rubber business is needed, he can write it himself—and probably will. But at least and at last, the editor is relieved of the task of explaining to disappointed readers that there are no books on the rubber business.

PRIZES TO BE AWARDED AT THE LONDON RUBBER EXPOSITION.

THE Fourth International Rubber and Allied Industries Exhibition, which is to be held in London next June and July, will be distinguished from its three predecessors by the exceptionally large number of prizes and trophies which have been offered by various associations and which will be awarded to the successful competitors at that time. Many of these prizes are offered for the best methods of gathering and cultivating and coagulating rubber. These, naturally, will be only of general interest to the great body of our home readers; but there are some offers that certainly should appeal to American rubber men, as they have to do not with the planting or cultivation of rubber, but with the extension of its use or with its efficient and profitable manufacture.

The Mincing Lane Tea and Rubber Share Brokers' Association offers two prizes—one of 75 and the other of 25 guineas—for the best new ideas for the use of plantation rubber in a large way, the conditions being that the suggestions or inventions shall be thoroughly practical. The Rubber Growers' Association, of London, invites a similar competition, offering a prize of £50 and a gold medal for "the discovery and application of such new use for plantation rubber as may be adjudged the most valuable; special consideration being given to the weight of the rubber which such application is likely to consume."

Another prize—a valuable silver vase—offered by the "Gummi Zeitung" of Berlin, ought to awaken considerable interest among our factory experts. This trophy is offered for "the best design for laying out a factory for the manufacture of rubber goods; the specifications to include the greatest possible variety of production, to show the installation of individual machines for the working up of raw rubber, as well as machines for later processes and the arrangement for the finishing of the goods."

There is mentioned on another page of this issue, in some detail, the handsome silver cup, some 50 inches in height, offered by THE INDIA RUBBER WORLD for the best process of extracting latex from the wild *Hevea, Castilloa* or *Manihot* tree. This will interest most American readers chiefly as a proof that this publication is trying to encourage the gatherer of wild rubber to do his work intelligently and without waste; but the other three prizes which have been mentioned above—two for new ideas in the use of plantation rubber and the other for the best plan for factory equipment—ought certainly to touch a responsive chord in some of the American readers of this journal; and with our recognized inventive faculty there seems to be no reason why one, if not all, of these three awards should not, as they leave London (assuming that they do leave) take their way hitherward across the Atlantic.

Competitors for these awards must submit their offerings by May, or not later than June. Those who are interested in this subject should send to Mr. A. Staines Manders, manager of the exposition, at 75, Chancery Lane, London, W. C., for a pamphlet giving all the conditions of the contest.

GETTING ACCURATE RUBBER STATISTICS.

THE Rubber Club of America, in pursuance of its policy of making itself generally useful to its members and beyond its members to the industry at large, has recently sent, through its secretary, a circular to the rubber manufacturers of the country asking them for statistical information covering their particular plant and its product.

Everyone is familiar with the classification of inveracity made by some noted statistician, who divided all lies into "plain lies,——lies and statistics." The germ of truth that lies under this rather harsh characterization is due, undoubtedly, to the fact that accurate statistics have been very hard to get in the past. It is quite natural that the manufacturer should hesitate to turn his business inside out to the inspection of the government investigator, and of course where statistics are inaccurate at their origin they are not likely to gain in accuracy as they proceed. But it is of great value to any industry to have its figures accurately compiled. These figures show its condition. And if they bespeak a healthy condition there is cause for general congratulation; while if they indicate an unhealthy condition obviously the thing to do is to discover the cause and to apply the remedy.

The statistics asked for by the Rubber Club are not to be signed by the manufacturer who supplies them, his identity being indicated only by the number attached to the blank which he fills out; and this number the secretary agrees to keep in strict confidence. So that those who contribute to this information can feel fully assured that while they are rendering assistance to the trade at large they are doing it at no personal hazard.

CLEARLY LIBELOUS.

A CONNECTICUT journal, evidently with a waspish turn of mind, contained in a recent issue the following brief paragraph:

"Now that cheaper rubber is promised, it is believed the time will again come when a pair of rubber overshoes will wear as much as a fortnight."

This is a most unwarrantable slur. It is clearly inflammatory and ought to be actionable. The average overshoe as made today will survive many a fortnight. To be sure, if a man were competing in the Weston class and trying to do 50 miles a day over rough roads, and should encounter a continuous rainstorm, compelling him to wear rubbers from morn till night, a fortnight's service might mean many hundred miles, and at the end of such a jaunt a pair of rubbers might very properly petition to be retired. But with the average citizen, any pair of rubbers made by a reputable manufacturer will take him through an ordinary season, and sometimes much longer. The writer of this paragraph looks back with unalloyed admiration on a certain pair of rubbers, technically known as sandals, bearing the trade mark of an old established New Jersey company, which he purchased several years ago. He wore those rubbers, off and on (*on* only when the elements required it, of course) for some three years, and then, having occasion to go to a western city, took them with him. After a day of muddy walking he left those devoted rubbers on the porch over night, and in the morning they had disappeared—feloniously abstracted—to the owner's abiding regret.

Just how long the discriminating person who carried those rubbers away continued to wear them can never be known, but from their last appearance, after having been worn nearly four years—a presidential term—they seemed to be good for a still further period of service. In the light of this experience, the slur of the Connecticut journal on the humble golosh seems most undeserved.

WHAT THE RUBBER CHEMISTS ARE DOING.

[Extracts from recent articles on the Chemistry of Rubber which have appeared in some of the foreign publications.]

IN the "Gummi Zeitung," Vol. 28, page 126, Utz contributes an article on the "Examination of Golden Sulphide of Antimony." For the determination of the antimony he recommends an electrolytic method suggested by A. Classen (Quantitative Analyse durch Elektrolyse, 5th Edition, page 153), which is as follows: The antimony is dissolved in 80 c.c. of a saturated sodium sulphide solution (specific gravity 1.14). To this is added 30 c.c. of a freshly-prepared 30 per cent. potassium cyanide solution, and the whole mixture diluted with water to about 140 c.c. This solution is then electrolyzed at a temperature of 65 to 70 degs. C., using a current density of 1.2 to 1.3 amperes. After completion of the electrolysis the deposited metal is washed and dried with alcohol at 80 to 90 degs. C.

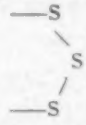
The above method is discussed by W. Schmitz in the "Gummi Zeitung," Volume 28, Page 453. Numerous authorities are quoted in support of the statement that such antimony determinations always fall high. For this reason Schmitz prefers the following volumetric method, which is based on the oxidation of trivalent antimony to pentavalent antimony by means of potassium bromate according to the following equation: $2KBrO_3 + 2HCl + 3Sb_2O_3 = 2KCl + 2HBr + 3Sb_2O_5$. Very accurate results are claimed for this method, which is carried out as follows: About 0.5 grams antimony, previously dried at 60 degs. C., are dissolved by means of concentrated hydrochloric acid (specific gravity 1.19) on the water bath. The heating is continued until lead acetate paper shows the evolution of sulphuretted hydrogen to have ceased. There is thereupon added an excess of tartaric acid crystals, the solution diluted with water, and filtered from any insoluble matter. A few c.c. of hydrochloric acid are thereupon added to the solution and the latter titrated with potassium bromate, using either methyl orange or indigo as an indicator. The potassium bromate solution is made up by diluting 2.7850 grams to a volume of 1 litre. Such a solution corresponds to 6 mgs. antimony per c.c.

R. Ditmar contributes an article in the "Chemiker Zeitung," No. 115, 1913, on the Coloring of Rubber Goods. It is pointed out that up to within recent date it has been impossible to use organic dyestuffs for coloring rubber goods which are steam or dry-heat cured. The dyestuffs referred to do not withstand the high temperature of vulcanization and accordingly mineral pigments have to be resorted to. It has been found, however, that the so-called vat dyes do withstand vulcanizing conditions and may be effectively used in place of the mineral pigments, the result being that a much larger variety of shades thus becomes available. Not only vat dyes, but all dyestuffs containing revertible groups, withstand vulcanizing conditions. Such dyestuffs are anthra quinone derivatives.

A British patent, No. 18506/1912, has been issued to Arthur Heinemann for the improving of synthetic rubber. It has been found that the soft condition very frequently inherent to synthetic rubber is due to the fact that certain portions are in a lower state of polymerization. It is therefore desirable to remove these insufficiently polymerized portions. These latter portions are insoluble in acetone and soluble in benzol, and therefore cannot be separated by the utilization of either of these solvents. It has been found, however, that ethyl acetate dissolves the insufficiently polymerized portions while the highly polymerized product is not affected by this solvent, provided the solvent is present in excess.

British patent No. 11530/1912 has been granted Farben Fabriken vorm. F. Bayer & Co. for the accelerating of vulcanization. It has been found that piperidine and its homologues materially increase the speed of vulcanization. For instance, 100 parts Pará rubber, 10 parts sulphur and 5 parts piperidine are vulcanized for 15 minutes at a temperature of 135 to 145 degs. C. The resulting product contains 3.5 per cent. combined sulphur. In the absence of the piperidine a period of one hour will be necessary to accomplish the same degree of vulcanization. Pyridine, quinoline and dimethyl aniline do not exhibit this accelerating property.

In the "Kolloid Zeitschrift," Volume 13, Page 49, F. Kirchhof contributes an article on the "Oxidation of Rubber." He points out that vulcanized rubber is more liable to oxidation than the unvulcanized product. By exposing vulcanized rubber containing varying amounts of combined sulphur, from which the free sulphur has been removed by extracting with acetone, it is found that about 1/3 of the total combined sulphur is readily oxidized to sulphuric acid, while 2/3 of the total combined sulphur is oxidized together with the combined rubber molecule. This result is in bearing with Erdmann's Thiozonide hypothesis of vulcanization, which regards 3 sulphur atoms of the following configuration:



as entering into combination with the rubber molecule at the double bond. It is that sulphur atom which is in combination with the two other sulphur atoms which Kirchhof suggests is oxidized to sulphuric acid. The two remaining sulphur atoms being in direct union with the rubber molecule remain with it even in the process of oxidation.

In the "Gummi Zeitung," Volume 28, Page 237, G. Huebener subjects the above communication of Kirchhof's to a criticism and himself carries out experiments similar to those of Kirchhof's, using hard rubber instead of soft rubber, which was used by the former investigator. He is unable to confirm results obtained by Kirchhof, and finds much more than 1/3 of the sulphur to be easily oxidized into sulphuric acid. For this reason he is of the opinion that in the case of hard rubber by no means is all the sulphur which can be removed with acetone to be regarded as combined sulphur. He is of the opinion that in hard rubber only a small amount of the free sulphur is extractable with acetone.

RUBBER MANUFACTURING STATISTICS IN THE NEXT CENSUS.

AS announced in another column, the Rubber Club of America has commenced taking a census of production, by which the extent and character of the industry will be clearly shown. The two main points on which information is sought are the size of the staff and the value of output in the principal branches of manufacture.

The information periodically issued by the Census Bureau as to the rubber industry has dealt with these points and likewise a number of others, as shown in the abstract of the figures for 1899, 1904 and 1909 compiled by THE INDIA RUBBER WORLD, which appeared in the issue of May 1, 1912, page 374, and showed the distribution under various broad divisions of the grand total of more than $200,000,000 a year.

But apart from the disadvantage of the census returns being issued only once in five years, is the fact that the classification is too broad, including: (1) belting, hose and packing; (2) boots and shoes, and (3) other goods. While dealing with the 1909 census figures, THE INDIA RUBBER WORLD found this wide classification too general and has for some years been in communication on the subject with the Director of the Census. Acting upon the suggestions of this journal, the Bureau has been preparing a special rubber industry form to be used by manufacturers for the census of 1914, in which the number of separate articles for report has been increased. Meanwhile the valuable work of the Rubber Club will (particularly if repeated periodically) prove of much benefit to the industry.

The Rubber Club's Fifteenth Annual Banquet.

THE fifteenth annual banquet of the Rubber Club of America, held at the Waldorf-Astoria, in New York City, on Tuesday evening, January 6, had several points in common with last year's function—it was held in the same room and there was the same arrangement of tables. But what brings the similarity out more strongly is that there were exactly the same number of members and guests in attendance. They began to arrive about half an hour before the time set for the dinner, and the spacious reception room in the Astor Gallery was filled almost to overflowing with 190 representative rubber men.

To one accidentally overhearing some of the conversation it might have seemed that there was some political discussion regarding the different boroughs of New York City. Some stoutly championed the Bronx, while others were equally enthusiastic in regard to Manhattan, but when the name "Martini" was heard, the puzzle was solved. The reception before the dinner gave those who needed it an opportunity to sharpen their appetites—an opportunity very generally improved.

They came, as usual, from the four quarters of the compass; from New England and New York, from Pennsylvania and Ohio —and even from as far West as Chicago. The East and West joined hands in hearty fellowship, and if the East had rather the advantage numerically the West had the compensating advantage of the greater enthusiasm characteristic of that section; and this occasion gave another proof of the value of this Annual Rubber Club Dinner as a promoter and stimulater of mutual good will. The progressive spirit of the rubber industry and the rapid advance that it is making from year to year are in no small measure due to the friendly feeling, even in the midst of keen rivalry, that exists throughout all branches of the trade.

The assembly filed into the dining room at the appointed time and sat down to enjoy the attractive menu exploited herewith. At each plate was a printed list of more than a dozen popular songs, and in the balcony was an orchestra which had some difficulty in holding its own against the professional singer and the nearly 200 amateurs, for everyone joined in all the choruses with a will.

MENU.

Huitres de Cotuit

Potage Tortue Verte à l'Anglaise

Radis Olives Céleri Amandes

Fillet de Kingfish, sauce Homard
Salade de Tomates et Concombres

Champignons frais sous cloche

Medaillon de Boeuf à la Rose
Pommes de terre, Palestine Petits pois français, sautés

Poitrine de Volaille farcie, sauce Diablée
Coeurs de Laitue au Roquefort

Bombe de Vanille, sauce Chocolat
Gateaux Assortis
Café

Sauternes

THE WALDORF-ASTORIA. le 6 Janvier, 1914.

After dinner, President Hodgman proposed a toast to the President of the United States, and the diners arose in unison and heartily complied with his request. The speeches, of which there were not too many, were for the most part short and dotted with witticisms which kept the hearers in constant good humor.

THE PRESIDENT'S ADDRESS.

After the toast had been drunk (while the orchestra appropriately played "America"), President Hodgman addressed the assembly as follows:

"Fellow members of the Rubber Club of America, and honorable guests: It is a great pleasure to welcome you tonight to the Fifteenth Annual Banquet of the Rubber Club of America.

"It is now nearly two years since our club took steps to change

GEORGE B. HODGMAN,
President.

FREDERICK H. JONES,
Vice-President.

CHARLES A. COE,
Chairman of the Dinner Committee.

it from a purely social to a business and social organization, with more emphasis on the *business*. While it is not my purpose to go into detail as to what has been done under this new regime (as it is my intention to take this up more fully at our annual meeting in April), I do wish to say that I feel that much good has been already accomplished, and the work so ably inaugurated by my predecessor, Frederic C. Hood, has been broadened and carried on through the hearty co-operation of your executive committee, and the efficient work of our secretary, Mr. Vorhis. We have established our office in New York, at 354 Fourth avenue (where any of you will be welcome at any time), and have now the proper facilities for the further carrying on of our work.

"We have before us a number of propositions which are to be worked out for the benefit of the rubber trade of the United States, but as I have before stated, I do not intend to elaborate upon these now, as this is not a business, but a social occasion. I do, however, ask the co-operation of all our members, in all our efforts, for the good of our industry.

"The fifteen years which have passed since the founding of this organization as the New England Rubber Club, and particularly the past five, have been years of tremendous progress. It is unfortunate that we cannot have at our command statistics which will show how greatly our industry has grown, for if we had the figures I feel quite sure that we would all be surprised at what they would reveal. While the general public may not realize it, the rubber manufacturing business of the United States is now one of the great industries of our country and of the world. Our future possibilities are unlimited, and in the further development of our great opportunities the Rubber Club of America should perform a useful service."

That everyone agreed with President Hodgman's sentiment was indicated by the hearty applause which followed. He then introduced Justice Almet F. Jenks, of the Appellate Division of the New York State Supreme Court.

THE SUBSTANCE WITH A "COME BACK."

During his brief remarks, Justice Jenks paid high tribute to rubber and defined it in such new and amusing terms that he kept his hearers laughing continuously during the ten minutes of his speech. After stating that he hailed from Brooklyn, which is reputed to be the home of the rubber plant, Judge Jenks spoke of the vital questions of the day, one of which is the currency problem which is before the American people for solution. He suggested that if we are to have an elastic currency, which many are advocating, it should by all means be made of rubber.

ROBERT L. RICE.

WILLIAM E. BARKER.

ROBERT B. BAIRD.

Members of the Dinner Committee.

In giving a new definition to this universally essential substance which we all have to depend upon for one purpose or another at frequent intervals of our existence, the speaker said: "Rubber is the epitome of life. Life begins with a rubber ring and ends with a rubber trust. Rubber is protection; rubber is resistance; rubber is restoration; rubber is the repartee of Nature, for it is the only thing that can always come back.

"One old Greek philosopher said: 'Give me a lever long enough and a place to rest it, and I can move the world.' This old philosopher was not up-to-date. He should have said: 'Give me a block of rubber and a place to rest it and the world can move on it.'"

EX-CONGRESSMAN LITTLETON ON OUR REPUBLIC.

Hon. Martin W. Littleton, former member of Congress, was next introduced by the chairman and expressed his opinion of the manner in which some things are done in this country. He paid a tribute to the head of our government by saying: "When a man is president of the United States, he is my president and yours—and we ought to stand by him." He illustrated the difference between a monarchy, a democracy and our own republic as follows:

"A monarchy is like a ship that floats safely until it strikes a reef; and then it sinks. A democracy, on the other hand, is like a raft; it never sinks, but your feet are always wet. We are living in a republic and the republic is on trial." Mr. Littleton made it clear to his hearers that, in his opinion, business in general is anxiously awaiting the outcome of the several momentous questions which are before the people today, and conveyed the impression that he referred partly to the Mexican situation and the apparent inclination of certain foreign powers to dictate what our own policy should be. He said: "In time of peace prepare to maintain it. I believe in a large navy, and if I had my way in the matter I would build a navy so large that no foreign power would try to dictate our policies, nor would they even dare to look across the water in our direction with any but peaceful motives."

MR. WILSON'S "HISTORY OF MEXICO."

After the hearty applause which followed Mr. Littleton's speech, proving that those present were in accord with his views, President Hodgman next introduced Henry Lane Wilson, former ambassador to Mexico. Mr. Wilson's address was distinguished from the preceding ten-minute speeches by being lengthened out to several times ten minutes. It took the form of a history of the Mexican people and began back almost at the time of their aboriginal ancestors, bringing them down through the ages to the modern turbulent times of the Latin-American race; giving a detailed review of the varied reasons for the present revolution in Mexico, and of those causes which led up to the ambassador's own leave-taking from that *Tierra Caliente*.

The speaker made quite an impression when he said that the United States had actually intervened in Mexico—not by arms but by dictation as to the manner in which they should run their affairs; and also that there was documentary evidence on file in Washington, secured by government secret service men, showing that a certain large and well-known oil company assisted Madero in his attempt to overthrow the Mexican government.

"The conditions in Mexico today," he continued, "are worse than reported by the press. The country is full of revolutionists, half-civilized Indians who make plunder their business. It is not because of patriotism that they are fighting, and so long as loot is in sight the uprisings will continue. The Mexican politicians fully realize this point and are using these ignorant natives in an effort to overthrow their enemies.

"If the government of General Huerta had been recognized at its inception it would have made peace throughout Mexico and thousands of lives would have been saved and millions of dollars of property, especially of foreigners and Americans, would not have been destroyed. The administration at Washington saw fit not to accept my recommendation to recognize the government of General Huerta and at that time I predicted exactly what has occurred there during the last six months and exactly the conditions that prevail there today.

"We have now actually intervened in Mexico. Don't make any mistake about that—not by arms, but we have nevertheless actually intervened in Mexico.

"And we have sent down there private, special unofficial representatives of the President for the purpose of telling the Mexican people how they should govern their country, whom they should put into office and whom they should put out of office.

"Whenever before has this government ordered Americans out of a foreign country without guarantee of protection for their losses, or announced a policy which makes us virtually overlords of every republic from the Rio Grande to Cape Horn and makes it necessary to interfere in every turbulent republic in that great empire?

"These are policies born of scholastic dreams, or, perhaps, of ideas formed before unhappy divisions made possible the exercise of power by theorists.

"The president of this Republic—and I have the greatest respect for him—is a master of the English language and of eloquent and persuasive diction. He can smite the harp of idealism and from every idealistic mind in this Republic will come a response; from every mind wandering in the bogs of esthetic dreams.

"But these good people must know, ought to know, that at the judgment bar of history they will be responsible for all the destruction of property, for all the loss of life, for all the hatred and rancor in Latin America and suspicion in Europe; and finally, for the sowing of the seeds of antagonism and distrust between this country and the greatest country in possibilities near us for all time to come."

THE REV. MR. GILES PROVOKES GOOD HUMOR.

The chairman next introduced Rev. Warren W. Giles, of East Orange, New Jersey, who filled the assembly with continuous mirth by his witticisms and pointed anecdotes. He spoke in part as follows:

"While sitting here listening to the preceding speaker I have gained several new conceptions. One of them is a new conception of 'esthetic dreams' with which the President of our country has been charged. I have also gained an entirely new idea of 20 minutes." This sally—at the expense of the ex-ambassador, who had promised to speak twenty minutes and had spoken for several times that number of minutes—appeared to be greatly enjoyed by everyone present—with the possible exception of the ex-ambassador.

In a more serious vein, however, Mr. Giles spoke briefly on efficiency, laying special emphasis on the fact that this is an era of efficiency, and especially of specialization. In no other

THEODORE W. BASSETT,
Member of the Dinner Committee.

HON. HENRY LANE WILSON,
Speaker.

HON. MARTIN W. LITTLETON,
Speaker.

industry or line of endeavor, he explained, has specialization been brought out more strongly than in the utilization of the product of the rubber tree. It is efficiency that has built up our enormous factories employing thousands of workers trained for their particular duties.

Among other anecdotes, the speaker related an amusing incident which served to illustrate the care which is usually exercised by the heads of business houses in engaging efficient employes. The story is, in effect, as follows: The head of a certain large New York banking house desired to engage a man to fill a very important position. A young man from Boston was recommended to him as being particularly well fitted for the place and the banker wrote to that intellectual center for information regarding the prospect. The answer came back, giving the young man's pedigree from the landing of the Mayflower down to the present; it told of his numerous distinguished antecedents and of the illustrious blood that coursed through his veins, etc., etc. Immediately the New York banker wrote back: "We do not want this young man for the purpose of demonstrating the Eugenic theory; we want him for business."

Mr. Giles was the last speaker and his position on the program could not have been better placed, for he sent every one away in excellent humor. And when the assemblage broke up—a few minutes on the virtuous side of midnight—everyone went home with a full realization that he had been cheered and invigorated in body and sustained, stimulated and enlarged in mind.

THE MEMBERS AND GUESTS PRESENT.

At the Speakers' Table.

Williams, Elisha S.
Littleton, Hon. Martin W.
Sawyer, Homer E.
Jenks, Justice Almet F.
Hodgman, George B.
Wilson, Hon. Henry Lane
Jones, Frederick H.
Flint, John H.
Bourn, Hon. Augustus O.
Appleton, Col. Francis H.
Giles, Rev. Warren W.

Alphabetical List of Those Present.

A

Adams, H. J.
Andersen, E. A.
Archer, A. W. Jr.
Archer, C. B.
Archer, Stephen O.
Armstrong, H. G.
Arnold, Charles H.
Arnold, W. H.
Appleton, Col. Francis H.
Appleton, Lloyd E.

B

Badenhop, Robert.
Baird, C. W.
Baird, Robert B.
Baird, Robert L.
Baird, William T.
Ballou, R. H.
Barnard, O. A.
Barker, William E.
Bassett, Theodore W.
Bauer, F. M.
Bedell, Harold H.
Bourn, Hon. A. O.
Bourn, A. O. Jr.,
Brunn, A. W.
Burnham, Ira F.
Byles, W. E.

C

Carberry, John D.
Cassidy, John J.
Chipman, R. L.
Coe, Charles A.
Conlin, Andrew J.
Cornell, A. Boyd
Cottle, Mr.
Cutler, D. A.

D

Dammann, M.
Davis, J. E.
Devine, Joseph P.
Dowse, B. C.
Draston, Ed. H.
Dunn, H. T.
Duryee, A. R.
DuPuy, H. Wilfred

F

Faber, Eberhard
Faber, Lothar W.
Falls, Thomas J.
Feinburg, D.
Ferra, Henry
Fillingham, M. P.
Firestone, H. S.
Fisk, H. G.
Flint, John H.
Fox, F. S.
French, H. W.
Fuller, Harold P.
Fuller, R. H. B.

G

Gardner, Geo. A.
Garretson, C. D.
Garthwaite, A. A.
Giles, Rev. Warren A.
Gillespie, R. H.
Gillespie, W. F.
Githens, H. A.
Gove, F. G.
Gough, Wallace L.
Grafton, Edward H.
Greene, N. Lincoln

H

Hardy, Mr.
Harrison, Clark W.
Hawkins, D. A.
Hawkins, J. J.
Henderson, Bancroft W.
Henderson, Francis R.
Henderson, Harold
Hewins, E. D.
Hichborn, George
Hicks, Ellsworth H.
Hillmann, William
Hodgman, George B.
Hodgman, S. T.
Hubbard, H. B.
Huber, Edward E.
Hutton, W. C.

I

Inwood, W. A.

J

Jacoby, Ernest
Jenks, Justice Almet F.
Johnstone, James T.
Jones, Frederick H.

K

Kahn, Julius A.
Kelly, W. J.
Kelly, Dr. W. J.
Kendall, J. A.
Kenyon, Jr., C.
Kenyon, George
Kenyon, H. L.
Kittle, F. L.
Korn, Ernst A.
Kush, Gustave

L

Lahey, Frank T.
Lee, J. Ellwood
L'Hommedieu, S. Y.
Lingley, F. W.
Littlejohn, L.
Littleton, Hon. Martin W.
Lloyd, A. E.
Loeb, Mr.
Loewenthal, C. H.
Loewenthal, Paul
Loewenthal, R. A.
Loewenthal, R. M.
Lowman, J. S.
Ludington, G. A.
Lynch, Charles E.

M

Manchester, A. A.
Martindale, Mr.
Maurer, Ed.
McKenna, Francis R.
McNamara, L. P.
Meyers, A. C.
Montgomery, Henry
Moon, A. E.
Moses, Fred. L.
Muehlstein, Herman
Muehlstein, J.
Mullen, William
Murray, James A.

N

Norton, Ellsworth S.

O

Oakley, C. H.
Odell, James E.

P

Palmer, C. E.
Palmer, William H.
Parker, Russell
Parson, Mr.
Peaty, F. H.
Perlish, Henry
Pfaff, Edward F.
Piper, W. E.
Pitcher, Conrad N.
Plumb, L. J.
Procter, William L.
Pusinelli, Fred.

R

Raymond, Howard E.
Reeve, Arthur
Rice, Robert L.
Rood, W. B.
Ryckman, W. G.

S

Sawyer, Homer E.
Schlosser, George
Schmidt, Paul
Schwab, F. M.
Sibley, Wm. M.
Smith, Geo. E.
Soote, R. S.
Stearns, E. Ward
Stiles, Lynn
Stiles, William
Stone, J. Everett
Stowe, Griswold
Sweeney, Edward C.
Sweet, W. A.
Sydeman, Joseph M.

T

Tallman, A. V. W.
Thalheimer, Albert
Thomas, J. W.
Thompson, Kennedy M.
Thomas, L. H.
Tweedy, O. S.

V

Van Derbeck, Frank H.
Van Etten, J. de C.
Vorhis, Harry S.

W

Wadbrook, Elston E.
Walker, David
Wanning, H. F.
Warren, A. W.
Weber, Edward E.
Weston, J. C.
Whitehead, Alfred
Whitworth, F.
Wies, George A.
Williams, Elisha S.
Wilson, Chas. T.
Wilson, H. C.
Wilson, Hon. Henry Lane
Wood, Chas. E.
Wright, Samuel

Y

Young, Philip E.
Yule, W. H.

Z

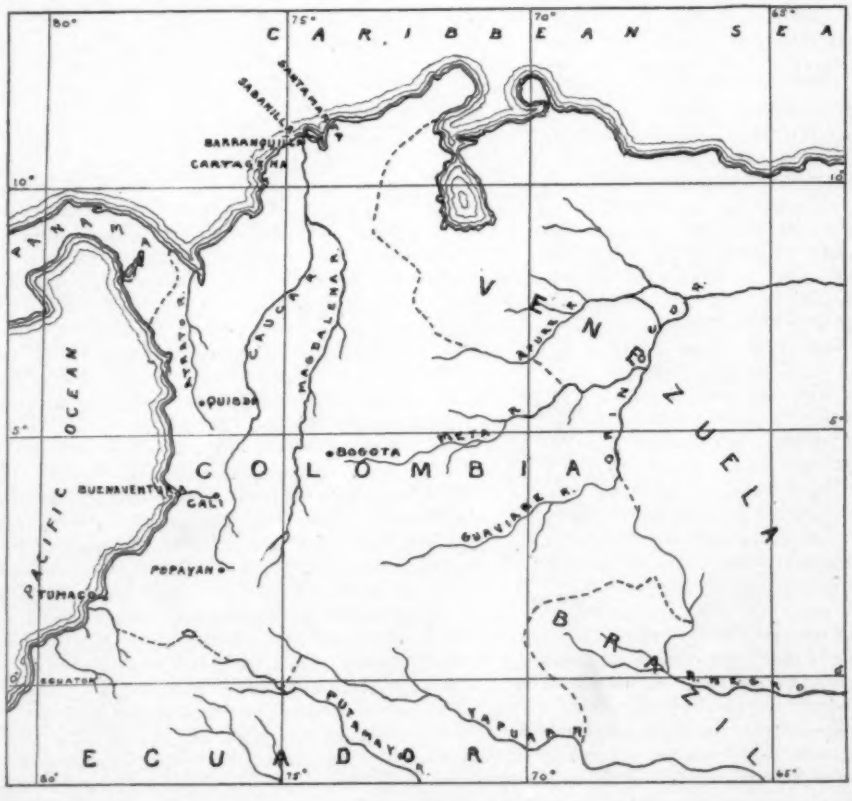
Zeiss, Albert
Zinner, M. J.

Some Neglected Near-By Markets—I.

COLOMBIA.

THE opening of the Panama Canal is not merely an occasion for fireworks, orations and World's Fairs. It is the beginning of a new era in the commerce of the world. For ten years we have watched the work of construction going on. With its completion the burden of duty is transferred to other bearers. The directors, the engineers, the laborers have done their part. The nation has paid the bills and now looks to the American business men to take up their share of the work in utilizing the canal to add to the nation's wealth. It was not built in order that we might enjoy the moving spectacle of fleet after fleet of German, British and other foreign merchant ships passing through its locks. It was built that it might be used by American business, for profit to itself as well as to the nation at large.

It is axiomatic that if the canal is used somebody must use it and it is high time for each American producer of exportable goods to ask himself what he is going to do toward utilizing the canal which the nation has built for him. All that is asked of him is that he assist in the work of exchanging the wealth of our land for greater wealth from other lands—for instance, to send away a few cases of rubber goods and receive a greater value in gold from the mining districts, where those goods are needed. In Colombia, the most accessible of the South American republics, lies, ready for taking, a store of wealth vast beyond imagination, wealth as yet barely touched, concrete wealth calling aloud to the American exporter to come and get his share. Colombia has an area greater than that of all the States east of the Mississippi and north of the Ohio, with Virginia and West Virginia added. A land filled with precious metals and gems; a land which, in the opinion of informed geologists, holds the future supply of copper for the world. Gold is found in every part of the Republic and has been mined for four hundred years, yet this source of wealth has merely been scratched. The world's supply of emeralds comes from Colombia, a million dollars a year being exported of these gems whose value, weight for weight, is far greater than that of diamonds. The emerald mines of Colombia are a government monopoly, worked by companies on concessions. At present the gems are gathered in the most primitive way, but it is certain that improved machinery will soon find its way to the mines and exports of this precious stone be multiplied many times. Not one-tenth of one per cent. of the known area of the mines has yet been exploited. There are besides mines of diamond, ruby and amethyst. The gold mines are estimated to have yielded a total of $250,000,000 since the middle of the sixteenth century, and their development has hardly begun, most of this great total having been taken by primitive means and mere surface scratching. It is not too much to expect from the mines of gold and gems that they will yet show a development comparable with those of South Africa. Silver is found in many places in remarkable richness, but the backward development of the country, the depression of silver the world over and the greater certainty of profit in gold mining have prevented the silver mining industry from attaining the magnitude it would have done otherwise. In the production of platinum Colombia comes next after Russia and shares with that country a practical monopoly of the world's market. Iron, mercury and lead are plentiful, while the coal fields are extensive and valuable. The petroleum fields also are of great importance.



MAP OF COLOMBIA.

The forests are bewildering in their extent and richness. Not only mahogany and other valuable timber trees, including oaks in the higher temperate regions, but other forest products are found, in variety probably equalled nowhere else on earth. Rubber—*Hevea, Sapium* and especially *Castilloa*—is found in many places, but at present the value of this item in exports is exceeded by "vegetable ivory." Another important item of the natural forests is the tonka bean, which contains coumarin, giving it the pleasant odor of sweet vernal grass. It is used in perfumery, in the manufacture of soap and snuff, and in the manufacture of substitutes for vanilla flavoring.

Of agricultural products there is nothing in the tropic or temperate zones which will not grow in Colombia, which has, on account of its varying elevations, every climate from the luxuriance of the tropics to the bleakness of eternal snow. Coffee, cacao, rubber, cotton, corn and other grains, with all manner of fruits, both tropic and temperate, are grown. The banana export trade is large and is increasing rapidly. The vast, grassy plains furnish forage for millions of cattle, and the live-stock industry, already of great importance, can be increased indefinitely.

This great country has at the present time a population of a little over four millions, or about that of Massachusetts and Rhode Island. This population includes Indians, wild and tame, to the extent of 50 per cent. The negro element is not large, relatively speaking. In this sparse population, with its usual tropical fondness for leisure, lies the explanation of why the incalculable riches of the country have lain so long undeveloped. But the country is waking up at last. The period of revolutions is definitely past and the people are showing real aptitude for democratic government. A sure sign of progress in any country is the rapid growth of cities, and this in Colombia is marked. The wants of a simple peasantry are few, but with the growth of cities comes a demand for the luxuries and refinements of life.

As the vast wealth of Colombia goes out into the world's commerce in ever-increasing volume, goods of every kind from the markets of the world will maintain the return flow. At present the United States receives about half the total exports of Colombia, but furnishes little more than one-fourth of that country's imports. Of imports in 1911, classified as "rubber, celluloid, etc.," American manufacturers furnished the impressive total of $19,444.84, this being about one-fifth of the total importation. There are, of course, many good-sized American villages which exceed this figure, but it is a great error to suppose that because an infant is small it must ever remain so. Here are the figures for rubber and allied importations for 1911:

Germany	$30,097.79
France	22,296.39
United States	19,444.84
United Kingdom	9,293.20
Spain	36.00
Panama	8.80
Other countries	3,327.74
Total	$84,504.76

When we consider that the chief ports of Colombia lie due south of New York and that American rubber manufactures go all over the world, it would seem that in the matter of Colombian trade Americans were not getting their share.

The great industrial and commercial development of Colombia is now definitely under way and the demand for imported goods of every kind is bound to grow enormously within the next few years. About seven hundred miles of railway are now under operation and fully two thousand more are under construction or survey. The cities are beginning to pave and asphalt their streets. Bogota, the capital, with a population of 125,000, which as yet has no direct communication with the coast, has vast plans for asphalting her streets and improving her suburban roads. An automobile road, one hundred miles in length, between the important cities of Cartagena and Barranquilla, is a work of the immediate future. Towns missed a few miles by the railroads, completed or projected, are building roads for automobile trucks to bring them in touch with the railroads. The good roads movement is in full swing and will grow by what it feeds upon. There are now probably a thousand automobiles in the country, nearly all being of American manufacture. Wherever the proud automobile goes, its humble relative, the bicycle, may be found. The numbers of each will increase with geometric ratio for several years to come and the market for tires will be great, growing and permanent.

The development of agriculture on a scientific basis calls for engines and machinery, where belting will be required. Especially is this the case where engines for pumping for irrigation are needed during the dry seasons. In this connection it may be said that as the higher civilization advances and waterworks multiply the use of garden hose is bound to grow. The magnificent forests will soon be echoing with the sound of sawmills and again great quantities of belting will be called for. This is also true of the continued increase of mining industries. Every town in Colombia is thinking of electric light. The larger places have lights and the smaller ones are eagerly planning for them. These are run chiefly by water-power, of which Colombia has enough going to waste to turn as many manufacturing wheels as there are now in the entire world. Factories run by water-power are rapidly increasing. Belting and insulated wire in ever-increasing quantites are clearly called for in connection with this vast hydro-electric development of the immediate future.

The sale of rubber shoes is not likely to be extensive in a country where most of the population goes barefoot, but rubber boots for use in hydraulic mines and by sportsmen and fishermen may meet with sale. It is not easy to say what are the possibilities of the market for rubber coats and ponchos. Finally, the growth of cities, of wealth and of facilities for transportation, means a proportionate increase of demand for druggists' sundries and a thousand articles of luxury and convenience.

To establish a trade in this country of boundless future growth and possibilities the manufacturer can well afford to spend many times the profit of his early sales. To get this trade he will go after it exactly as if it were in Nova Scotia—with a difference. The first difference is that all the letters, catalogs and other printed matter must be in Spanish. English circulars and catalogs are as completely wasted on the Colombian merchant as would be similar articles in Spanish on the merchants of Vermont. Another thing to remember is that the language of politeness must be used. We may think that they are too flowery in their business letters. They think that we are too curt and brusque—and they are right. A prominent New York business house recently announced that it could see no use of consuming time in the further use of such phrases as "Dear Sir" and "Yours truly" which, accordingly, have been discontinued. This crude barbarism probably saved the hire of one clerk and lost a lot of customers. If the accustomed phrases of Castillian politeness are omitted from a letter to a Spanish-American merchant the psychological result is distinctly unpleasant. Then the goods must be described simply, explicity, understandably and truthfully. They should, where measurements are called for, be described in terms of the metric system. A catalog in English, offering goods at so much per pound, is about as useful to a Colombian merchant as would be one for an Iowa merchant printed in Russian and offering certain commodities at so many kopecks per pood.

In fixing the price the manufacturer should carefully figure cost of production, interest, packing, freight and customs, and leave a safe but not excessive margin of profit. If he cannot make the price attractive, he might as well spare himself all effort. Having figured an interest charge into the selling price he can be magnanimous in the matter of credit. No use demanding cash in advance of a merchant who can buy on long credit all the German or British goods he desires. This credit is necessary on account of the paucity of real money in the republic, of the fact that the ultimate consumers are dependent on seasonal crops and that interest on ready money ranges from eighteen to twenty-four per cent. per annum. The usual method with English houses is to give six months' credit without interest and an option of extension for another six months with interest at a low rate. Payment is usually made by a draft accepted

for collection by the local bank. When the merchant is offered an article from the English manufacturer on these terms and by an American at the same price for spot cash, which the merchant must borrow at twenty-four per cent., there is little doubt as to which will get the order. There are many New York banks where exchange may be had at a very reasonable rate.

The currency of Colombia is based on the peso, which is one-fifth of a pound sterling, or a little less than the American dollar. There is, for local use, a depreciated paper currency which the government is working to retire. A story is told of an American who ordered toast and coffee in a Cartagena restaurant and was horrified to receive a check for eighty dollars. He was game and passed up a one-hundred dollar American gold certificate. There was great consternation in the cashier's office and a hurried trip to the bank across the street. At last the waiter came back with many apologies for delay and brought back the change, $9,920.00, of Colombian paper money. That is the rate today, one hundred paper dollars for one dollar in gold. Of course it never will be redeemed at par. But neither was the continental currency issued by our patriotic forefathers—$242,000,000—ever redeemed. Not a cent of it. The issue of irredeemable paper currency is a bad and clumsy kind of taxation on the business of the country, the depreciation being gradual as it passes from hand to hand. But as foreign goods are paid for on a gold basis, the exporter need not worry about currency. Information about tariff rates and consular invoices may be obtained from the Department of Commerce, Washington, D. C.

In the matter of packing, the first thing for the shipper to remember is that he has a special problem on hand and that he must give it special attention. The goods must be packed lightly and strongly, for they are going a long way and freights, certainly, and tariffs, possibly, are involved when useless weights are added. They must have, in most cases, security from the tropic rains which are pretty certain to beat on the package before it reaches its destination. When possible the package should be split into convenient units for handling, as the difficulties of managing heavy packages are greater in new countries and frequently must be paid for in damage or extra cost of handling. Second-hand cases should never be used, especially [illegible]ich bear irrelevant and obsolete labels. The labeling should be very distinct, with the name of port, ultimate destination and consignee conspicuously shown. Labels indicating contents, method of handling, etc., should invariably be in Spanish. Suppose a package comes from Colombia to New York marked "Con Cuidado." What would the husky freight handlers of Hoboken make of it? It means "Handle With Care," but how is Mike going to know that? On the other hand, if it is marked "Handle With Care" and sent to Colombia, Miguel will not know that it means "Con Cuidado" and will, no more than Mike, care what the preposterous foreign label means. In addition to all else, the shipper should take warning from the experience resulting from the mistakes of a thousand who have gone before and not "take the liberty" to deviate in the least from the instructions he receives from his customer. The latter knows why he wants his goods packed a certain way. It may have to do with interior transportation, with climatic conditions, with customs regulations or with something undreamed of by the shipper. In fact, the more strange-appearing the request the greater, usually, is the necessity for strict compliance. The customer is vexed at being taken for a fool, still more vexed at the added cost for inconvenience to which he is subjected—and he gives his next order where his instructions may be heeded. Invoices should be in both English and Spanish, and a politely worded letter should be forwarded at the time of shipment.

The postal service of Colombia is efficient and shows steady improvement. A parcels post system exists between the United States and Colombia by which parcels up to eleven pounds may be sent at twelve cents a pound. To articles shipped in this manner a charge of twenty per cent. extra is made in customs duties, this in lieu of all other charges for invoicing, etc. There are ten thousand miles of telegraph wire, besides several wireless stations. Telephone systems exist in the principal towns. The cost of living to commercial travelers is somewhat greater than in the United States. As low as seven dollars, as high as fifteen dollars a day is considered reasonable by different authorities. A traveling agent should be conversant with both the Spanish language and Spanish customs of polite dealing, as well as having the indispensable adaptability and tact of the accomplished salesman. As there are no mercantile agencies, the matter of credit must be left to the judgment of the agent or reference may be made to the local bank. The Colombian merchants as a whole have a reputation for integrity as high as those of any country on earth.

Of the Carribean ports, Barranquilla, with a population of 50,000, stands first in exports and imports. Cartagena, famous in history, has a population of 40,000, and is the seat of extensive American capital. It stands second. Santa Marta is a flourishing town, the center of the banana-exporting trade. Cucuta, with 20,000, is an interior town on the Venezuelan border, reached by railroad.

The port which will derive the most benefit from the opening of the canal is undoubtedly Buenaventura, on the Pacific coast. A small town at present, its trade is fast mounting into the millions and these will become tens of millions with the completion of the canal and of the system of railways which connect the port with the rich interior of Colombia. Plans have been made for dredging, docks, public buildings, water-works, sanitation and electric light, all-sufficient for a great city and under the control of the Colombian government. The present railway reaches Cali, the chief town of the fabulously rich Cauca Valley, and thence extensions are being built to reach the chief towns of the interior, including Bogota, the capital. The American Consul-General at Bogota is Charles H. Small. Other consuls and consular agents are: Barranquilla, Isaac A. Manning; Cartagena, Graham H. Kemper; Santa Marta, William H. Trout; Medelin, Silas H. Wright, and Cali, Edward H. Mason.

The attitude of Colombians toward the United States, on account of political happenings of recent years, cannot be ignored. Every effort should be made both by the administration and individuals to soothe the wounded *amour propre* of the Colombians, who regard us as having been instrumental in that most grievous of national happenings, the dismemberment of their territory. But the past is past, the canal has been dug and Colombia is going to prosper vastly as a consequence. Possibly a majority of Americans and a majority of Colombians are unable to approve of all that was done by their respective governments in 1903. A thought that may not be amiss is that the great reef of rocks called the isthmus, by preventing communication between the oceans, was a gigantic international nuisance, worth less than nothing by the four hundred million dollars it cost to cut the canal and abate that nuisance. That any nation having political control over those rocks and swamps should be entitled to a colossal sum for permitting the nuisance to be ended cannot well be defended as a matter of equity or morals. The Colombian does not need be told this. We have the canal and can afford to be contrite and courteous. And in matters of commerce we have the goods.

Go into any good residence section of New York City and you will find greybeards sitting around telling about the fortunes they could have made if, in their youth, they had invested in Harlem lots. They could have invested, but they did not. They thought that the growth of the city was completed. Are they investing in Bronx lots now? Oh, no! They are convinced that the city is done growing northward. The manufacturer who does not take advantage of the tremendous opportunities

now opening in Spanish America can at least, in his old age, have the pleasure of sitting around and gossiping about the fortunes he might have made but did not.

There are four steamship lines running from New York to Colombia. The Hamburg American Line (Atlas Service), with offices at 45 Broadway, New York, has sailings on every Thursday for Cartagena and Puerto Colombia, and on every Saturday for Santa Marta, Buenaventura and Tumaco (via Colon).

The United Fruit Co., 17 Battery Place, New York, also has two sailings each week—one on Wednesday for the five ports mentioned above, and one on Saturday for Buenaventura and Tumaco (via Colon).

The Royal Mail Steam Packet Co., 24 State street, New York, has fortnightly sailings, its boats leaving every other Saturday for all of the different Colombian ports; and the Panama Rail Road Co., 24 State street, has sailings every week for Buenaventura and Tumaco (via Colon).

In a general way, the rates are from 15c. to 23c. per cubic foot or from 35c. to 50c. per hundred pounds, according to the ship's option. In addition there must be taken into consideration consular fees of from 1 per cent. to 3 per cent. on the value of the invoice, together with various incidental Government charges, including tonnage dues, lighthouse dues, bill of lading stamp and manifest fees aggregating from 5 to 10 per cent. of the freight rates. The Colombian Consul in New York is Mr. S. Escobar, 24 State street.

TRADE NEWS NOTES.

The value of the rubber exports from Guatemala in 1911 amounted to $159,621, and in 1912 to $140,768. Chicle was exported in 1911 to the value of $150,903 and in 1912 to the value of $274,853.

A United States consular report calls attention to a new style of cart being introduced into Ceylon by a manufacturing firm of Norwich, England, for conveying rubber latex. These carts are strongly made, with wrought iron frame and shafts, steel wheels and with removable galvanized iron swinging tanks fitted with airtight lids, and are in four sizes—30, 40, 60 and 100 gallons. They are designed to be drawn by one or two men, after the style of the jinrikisha.

The yield of plantation rubber in Java for the month of September, 1913, amounted to only 408,515 pounds, a decrease of 276,250 pounds from the production of August. This falling off is attributed to the effects of the drought experienced in the rubber districts of Java during the six months from April to September.

BRITISH GOVERNMENT SUPPORT FOR EASTERN PLANTERS.

At the recent annual dinner in London of the Straits Settlements Association, Sir Henry McCallum, late Governor of Ceylon (who presided), confidently predicted that rubber would overcome its depression, adding that a big fight with Brazil rubber was ahead and that planters required all possible government support. He further suggested that the government of the Federated Malay States should advance finances for a School of Agriculture, until the rubber companies would be able to contribute.

GRISAR & CO.'S PRICE CHART.

Displaying in a graphic manner the respective variations of Pará rubber in London and of plantation rubber at Antwerp, the chart of Messrs. Grisar & Co., of the latter port, for 1913 is of more than usual interest. The two grades followed a uniform downward movement from the beginning of the year until May, when they parted company; the former commanding a premium over the latter during the rest of the year. In this chart the history of the struggle between the rubbers is clearly shown.

RECEPTION TO DR. PEDRO DE TOLEDO.

Advices from Rio de Janeiro state that representatives of the rubber states of Brazil had tendered a reception to Dr. Pedro de Toledo, former Minister of Agriculture, to whom fell the task of carrying into effect the decrees intended to remedy existing conditions in Brazil. These decrees, moreover, were practically drafted by him as expressing the views of the rubber planters regarding their needs.

During the reception an artistic bronze statuette was presented to Dr. de Toledo, as a token of the appreciation in which his work was held by those interested. In the course of his speech of acknowledgment he remarked that while there was no doubt Oriental competition was threatening the interests of Brazil, Brazilian energy and economy were bound to prevail. He further alluded to the fact that the present standing of the East as a rubber producing center was due to the original transporting of Brazilian plants to Ceylon.

The importance of concerted action by the rubber-producing states was strongly urged; as well as the maintenance of quality. Co-operation on the part of the government was assured; in order that the cultivation, gathering and shipment of rubber might form a single issue for the general promotion of a business which is still regarded as the industrial glory of Brazil.

RUBBER EXPORTS FROM BRAZIL.

The Chamber of Deputies of Brazil has appointed a special committee to study the subject of protection of the rubber industry of that country. Brazil's total rubber exports for 1912 amounted to 42,286 metric tons, worth $78,221,821, and were divided, as to varieties of rubber, between Seringa, Maniçoba, Mangabeira and Sorva in the proportions of 38,152, 3,725, 389 and 20 metric tons, respectively; about 52 per cent. of this total amount coming to the United States, 35 per cent. being shipped to the United Kingdom and the greater portion of the remaining 13 per cent. to France. The rubber exports of Brazil from January to July, 1913, aggregated 22,790 tons, which was 1,972 tons less than the shipments for the same period of 1912.

NEW FIRM AT MANAOS.

By circular dated December 9, 1913, the establishment is announced of a new firm at Manáos, under the style of Pralow & Co. The general partner is Mr. H. Pralow, and the special partners are the Manaos firms: Tancredo Porto & Co., J. G. Araujo, Gomes & Co., Mendes & Co. and J. A. Leite. The firm will devote its attention to the commission and consignment business, as well as to the purchase, sale and export of Amazonian products. It is stated that the partners of the firm receive from the interior and control, together, about 4,000 tons of upriver rubber.

MEXICAN RUBBER EXPORTS TO BE REDUCED.

There will probably be a marked reduction in the exports of crude rubber from Mexico this year. This is due not so much to the revolution—which up to the present time has not seriously disturbed the large plantations in the Province of Chiapas—as it is to the new tax of 15c., Mexican money, per kilo (2.2 lbs.) on all crude rubber exported from that country, this tax being particularly burdensome as it is a gross tax levied not only on the rubber but on the boxes in which it is shipped. As a consequence of this new condition the large planters state that they will not attempt to ship any rubber the coming year, or as long as the present low prices continue to rule. Of course this rest will doubtless be beneficial to the trees; still it does not by any means indicate that the loss will be made up when shipping is resumed.

The contract made by the Mexican Government on February 1, 1909, with William H. Ellis for the operation of a factory for the manufacture of rubber goods has been extended until February 28, 1914.

New York's Fourteenth Annual Automobile Show.

LESS than two decades ago the appearance of any form of the then so-called "horseless carriage" was the signal for every pedestrian within seeing, hearing and smelling distance to stop and gaze with mingled wonder and amusement. The story of the marvelous growth of the automobile is so well known to the average person that it is useless to reiterate what has been repeated countless times in the newspapers and trade publications, save to point out that no other factor of modern industry has passed through such marked changes in such a short lapse of time. This relates to all branches of the industry; pleasure cars, commercial vehicles, tires and accessories of all kinds. The industry began with experiments, leaped to radical designs, and innovations, but is now gradually settling down to a conservative progress.

Thanks partly to this conservatism, the Fourteenth National Automobile Show, which was held in New York City under the auspices of the Automobile Chamber of Commerce from January 3 to 10, was held under one roof in Grand Central Palace instead of in two buildings over a mile apart. Another innovation at this year's show was the exclusion of motor trucks and the shortening of the time of the exhibit from two weeks to one. Altho there were not quite so many exhibitors, the four lower floors of the Palace were entirely given over to the show, and the attendance for the week reached far above that of last year.

ENTRANCE OF GRAND CENTRAL PALACE DURING AUTOMOBILE SHOW.

As announced in the January number of THE INDIA RUBBER WORLD, a number of the larger tire and rubber companies withdrew from the show this year; nevertheless, at the end of the week those companies which took the time and trouble to arrange their displays, reported in many instances that they had been well repaid, by reason of the amount of business actually done and prospects gained. A feature of the show, which differed in some respects from those of former years, was that there were fewer curiosity seekers, the great majority of visitors being interested in some particular line of accessories or having the purchase of a car in mind. This fact alone would seem to indicate that the annual shows, like the industry itself, are settling down to a more business-like basis.

The Grand Central Palace lends itself particularly well to exhibits of this kind, and it does not need any interior reconstruction, involving the expense of thousands of dollars, as was formerly the case, when the show was held in the historic Madison Square Garden. The simple decorations in the Palace made the interior into a "Corinthian Court," which was extremely harmonious and pleasing to the eye. A general view from the entrance and also a view from the balcony looking down on the main floor are shown in the accompanying reproduced photographs.

The following is a description of the exhibits made by those companies which are allied with the rubber industry in the manufacture of tires, tubes and other automobile rubber goods:

The Double Fabric Tire Co., of Auburn, Indiana, featured its Inter-Lock inner tire, which is a protector of reinforced rubber and fabric to be placed inside the tire casing and around the inner tube. It is claimed that this protector will effectually ward off punctures, prevent blow-outs and thus proiong the life of any tire on which it is used. Other products of this company are blow-out patches, boots, etc.

The Miller Rubber Co., of Akron, Ohio, exploited its two-cure process in which the layers of fabric forming the foundation of the tire are built up on an iron core and then placed in a heavy mold and vulcanized in the same way as in the full-mold process. The tread is then cemented on and vulcanized. This company also gave out circulars announcing that it is prepared to supply non-skid tread bands to be vulcanized on old tires. These tread bands are semi-cured and the vulcanizing process is completed when they are applied to the old tire. At this booth there was also shown a line of Miller inner tubes.

The Voorhees Rubber Mfg. Co., of Jersey City, New Jersey, laid special emphasis on the construction of its Brown Scientific inner tubes. These tubes are built up in tube form on round mandrels with eight laminations, which process seals up any pin holes which might occur in any single layer. These tubes are 93 per cent. pure rubber. In order to demonstrate the air-holding qualities of this tube, the exhibitors had a short section of 3½-inch inner tube clamped together at the ends and inflated to a circumference of 60 inches.

The Columb Tyres Import Co., of New York City, had on display a full line of Prowodnik tires in smooth and non-skid treads. A new tire in this line is one with steel studs set into the rubber.

The United & Globe Rubber Mfg. Cos., of Trenton, New Jersey, showed a line of Globe tires and inner tubes. The concern distributed booklets illustrating and describing the construction of these tires and tubes and showing the advantages gained in this particular construction.

The Cataract Rubber Co., of Boston, Massachusetts, displayed its complete line of tires, both solid and pneumatic, and also a line of gray and red inner tubes. The Cataract tire is made by the single cure process with a double breaker strip, reinforced bead, thick cushion tread and heavy sidewall construction. At this booth there were distributed circulars giving a number of good rules for the care of tires.

The Braender Rubber & Tire Co., of Rutherford, New Jersey, displayed several styles of Braender tires. In a circular distributed at this booth it was pointed out that the first set of these tires ever used in a race established world's records for tire endurance. This set of tires went through the 500-mile race at Indianapolis last year without a change. A number of other records were established during the past year, for which the makers claim first place for the endurance of their tires.

The Thermoid Rubber Co., of Trenton, New Jersey, showed a line of Nassau tires and tubes in all sizes, of both the clincher and straight side types and with both smooth and non-skid treads. This company also featured Thermoid brake lining, which is constructed of asbestos interwoven with brass wire and impregnated with an oil and waterproofing substance containing just sufficient rubber to insure that the lining will remain immune from deteriorating influences. The lining contains a little less than one per cent. of rubber.

The Brictson Mfg. Co., of Brookings, South Dakota, exhibited a new tire which is claimed to be more resilient than the ordinary tire and at the same time puncture-proof, and proof against skidding, blow-outs and rim cuts. The tire has a lining of leather and also a cover of leather containing five rows of steel studs. The tire is very strongly built and carries a 10,000-mile guarantee.

The Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio, showed its different styles of Marathon tires and tubes for automobiles and motorcycles. These tires are made with a special reinforced base and tread and are guaranteed by the makers to give 4,000 miles of service. The inner tubes are nearly an eighth of an inch thick and are built up with from six to nine plies of rubber stock.

The Overman Tire Co., of New York City, had on display the Overman cushion tire for both pleasure cars and trucks. These tires are made from solid rubber and the special tread construction, it is claimed, provides resiliency as well as non-skidding qualities. These tires are guaranteed to run 10,000 miles.

GENERAL VIEW OF FIRST FLOOR AT GRAND CENTRAL PALACE DURING AUTOMOBILE SHOW.

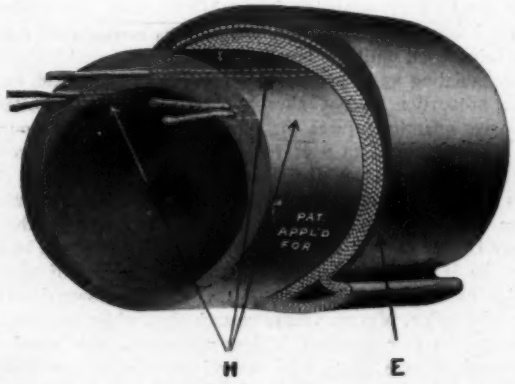
The Century Rubber Works, of Chicago, Illinois, displayed a line of Century tire reliners, double lock tire boots, clincher and laced tire boots, and a new cementless rubber patch of unvulcanized gum.

The Essex Rubber Co., of Trenton, New Jersey, showed its full line of inner tubes, inner sleeves, blow-out patches, reliners, tire plasters, rubber floor matting for automobiles, gas tubing, engine packing, hose, rubber goggles, spring pumpers and Essex brake lining, which is made from pure asbestos woven on brass wire treated with a waterproofing and fireproof substance.

The National Rubber Co., of St. Louis, Missouri, showed its regular line of "Narco" products, consisting of Tirenew, which

is a liquid compound of rubber to be applied with a brush to the exterior of a tire to fill cuts, to waterproof exposed fabric and also to give the tire a new appearance. This company also showed a tire cut filler which comes in collapsible tubes and which, when forced into a cut, quickly solidifies and becomes a part of the tire. Other "Narco" products shown were a liquid rubber compound for covering automobile tops and curtains and a product called "Leakanot" which is intended for waterproofing shoes, boots, gloves, caps, traveling bags, harness, golf bags and numerous other articles.

The Rubber Tire & Accessories Co., of New York City, featured a new type of inner tube containing five endless cables imbedded in the thickened tread portion of the tube and extending around its circumference. These cables, the makers assert, make the tube proof against blow-outs by reason of its reinforcement, thereby increasing the tire mileage. The extra heavy tire displayed by this company is shown at E in the accompanying illus-



THE NEW GREENSBURG REINFORCED INNER TUBE.

tration, and the reinforcing cables in the tube are indicated at H. The tire and tube are made by the Greensburg Tire & Rubber Co., Greensburg, Pennsylvania.

The Leather Tire Goods Co., of Niagara Falls, New York, demonstrated the Woodworth anti-skid tread for automobiles and motorcycles. This tread is a steel-studded leather cover for tires which prevents skidding and punctures and protects the tire from injury and wear. It is held in place by a series of coil springs along each side so that it is always under an even tension. This tread for automobile tires has been on the market for a number of years but the motorcycle tread is a newer product.

Chas. O. Tingley & Co., Rahway, New Jersey, exhibited a line of C. O. T. products consisting of tire solder, vulcanizing cements and compounds, patches, gas tubing, rim paint, tire powders, blow-out patches, rubber goggles, etc.

The Gray Specialty Co., Newark, New Jersey, also had on display a line of tube patches, tire repair outfits, tire lugs, rubber bumpers, blow-out patches, rubber gas bags and an outfit for vulcanizing tire repairs by the cold cure process.

The Newmastic Co., of New York City, demonstrated a number of pneumatic tires filled with "Newmastic." This material is a rubber compound which comes in liquid form and is forced into the tire under pressure. It solidifies in a short time but remains elastic and resilient.

The C. A. Shaler Co., of Waupun, Wisconsin, had its full line of vulcanizers on exhibition. This company makes vulcanizers of all types, operated by steam, electricity, gasolene or alcohol. They are also made in different sizes for garage use or for carrying in the tool-box of the car.

The Marvel Auto Supply Co., of Cleveland, Ohio, demonstrated the Marvel steam vulcanizer, which is of convenient size for carrying with the tire outfit or for use in the private garage. Steam may be generated in a few minutes and the outfit may be used for both tires and tubes.

The United States Gauge Co., of New York City, demonstrated the Invincible tire tester, which is a small gauge, the shape and size of a watch. To ascertain the air pressure in a tire, the gauge is pressed down over the tire valve and the indicator immediately points to the correct pressure on the valve. This gauge is built on the principle of the seamless tube steam gauge.

There were also several concerns exhibiting waterproofed top and curtain fabrics. The F. S. Carr Co., of Boston, Massachusetts, gave a practical demonstration of the water holding qualities of "Neverleek" top material, which is a heavy rubber-coated fabric. It is said to withstand baking, freezing or exposure; and the severe tests to which it has been put seem to bear out the claims of the manufacturers.

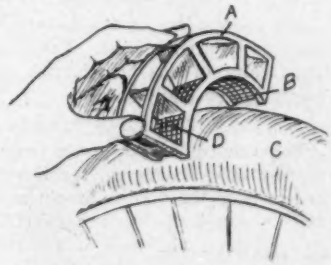
Wm. R. Laidlaw, Jr., of New York City, showed a line of Burbank automobile cloths for tops and seat coverings.

The L. J. Mutty Co., of Boston, Massachusetts, showed a number of samples of automobile top fabrics, rubber cloths and rubber tubings.

One interesting device seen at the show was a rubber-plated pedal pad made by the Auto Pedal Pad Co., of New York City. The metal pad is made with a recess which is filled with a corrugated block of rubber. This pedal is said to be superior to the ordinary all-metal type in that it prevents the driver's foot from slipping and also gives relief from the constant vibration transmitted to the pedal from the running gear and through road shocks.

PUNCTURE FINDER FOR THE MOTORIST.

The little device shown in the accompanying drawing should give hope to those motorists who have often spent many weary minutes by the roadside hunting for the elusive puncture by the bubble method. This puncture finder comprises a quadrant-shaped box *A* divided into four compartments. The inside curve *B* is made to fit the tire *C* and at the lower portion of each compartment is a piece of fine gauze *D*, above which is placed a piece of very light cotton. When the device is moved around the tread to a spot directly over a leak, the light cotton will be agitated by the escaping air, thus indicating the exact position of the puncture. At present the device is being made only for motorcycles, but there is no reason why it cannot be built for automobile tires upon the same principle. Obviously, the device is effective only in use with smooth-tread tires. [A. Harris, 23 Broad street, Birmingham, England.]



THE HARRIS PUNCTURE FINDER.

UNUSUAL TIRE MILEAGE.

Unusual tire mileage is reported by the Union Transfer Co., which handles the Pennsylvania Railroad Co.'s business in Philadelphia, Baltimore and Washington. This company has secured from an equipment of four Goodrich Wireless Motor Truck Tires on one of their trucks used in hauling baggage, records of 12,900, 17,000, 18,800 and 25,300 miles respectively. Mr. Brouse, the Goodrich representative in Philadelphia, states that any motor truck, under normal road conditions and properly handled—without over-loading or over-speeding—should secure fully as satisfactory mileage from this tire.

THE RUBBER TRADE IN GERMANY AND RUSSIA IN 1913.

By an Occasional Correspondent.

AS a result of the fall in crude rubber prices, German rubber manufacturers had in many cases offers of orders at prices which they had to decline. The cost of other raw materials had risen, rather than fallen; this remark applying to cotton goods, benzine, coal and other elements of manufacture.

The prices of automobile tires have suffered from foreign competition. It would seem that this article has reached a point where no profit remains, only high quality enabling producers to compete. The opinion has been expressed that the guarantees now customary exercise an injurious effect on the trade and that it is time they were abolished. No extension seems likely of trade in bicycle tires.

On account of the increased demand for the use of motor trucks, the trade in solid tires is increasing. The prices to dealers and consumers have been, however, so low as to preclude manufacturers from making a fair profit.

Rubber heels have been selling on the same scale as in 1912, but the tendency has been to use cheap goods instead of better qualities. Prospects for the coming year are about on a level with 1913.

Brewers' hose was more active, on account of the improved condition of the breweries. In gas tubing the ideal article is still being looked for, none of the existing forms being satisfactory. Steam hose has suffered from the competition of metal hose with movable joints. In place of the dearer acid hose, glass tubing has been in many cases used. Spiral rubber hose has suffered from the competition of other materials. Garden hose was disappointing to manufacturers, the season having opened well and then relapsed. Vacuum cleaner hose met with good demand on account of its advantages. Rubber mats and stair covering have been in request. Inquiry for bottle discs was moderate. Rubber gloves are being constantly sold on a scale of increased importance, for their various uses.

The relative lack of new factory installations naturally affected business in driving belts. Trade has for some years been unsatisfactory in this branch, the competition of leather belting becoming constantly keener.

THE RUSSIAN RUBBER GOODS MARKET.

The Russian rubber goods trade is said to be in an exceptionally active condition, the factories being overwhelmed with orders from the various provinces and some of them being unable to accept the business offered. They would not have got so far behind with their orders, but for the scarcity of benzine, resulting from the strike at Baku, which has made it necessary to import the article.

The demand has materially increased for all rubber articles, particularly for rubber shoes and automobile tires, while the augmented needs of industry and shipbuilding exercise a favorable effect on the mill supply trade.

The automobile tire business owes its activity to the fact that each automobile uses every year approximately $300 worth of tires, and the number of automobiles is increasing. The Russian industry cannot meet the requirements of the market and tires have to be imported.

Notwithstanding the active demand for rubber goods, prices have fallen, those of rubber shoes having dropped 20 to 25 per cent., and automobile tires 30 per cent. These reductions are due to the lower price of rubber, as well as to the reduction in cost of manufacture, through competition. Credits are in a satisfactory condition, business not being restricted from this cause, as is sometimes the case.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

AN ANTWERP VIEW OF PLANTATION AND PARA.

IN their annual report, Grisar & Co., of Antwerp, remark that the equality of plantation and fine Pará rubbers is no longer disputed when they are both well prepared, but at the same time the want of uniformity places the former in a position of inferiority to the latter.

Fine Pará is harvested by the only method known since time immemorial: the coagulation of the latex by the smoke of palm nuts found in the equatorial forests. This method, altho relatively primitive (as it leaves 15 to 20 per cent. of volatile substances in the rubber), has the advantage of the product being absolutely homogeneous and never varying in its quality.

The fact that the *Hevea* trees in the forest are so widely scattered makes it necessary for the rubber gatherer to locate his camp near a considerable cluster of old trees, in order to insure a sufficient supply of latex. Consequently the only trees placed under contribution are more than 20 years old.

In the East the situation is notably different, the rubber industry being relatively young, and various methods of coagulation being tried until the "rational process" is found. Meantime the coagulating agent principally employed is acetic acid, but the right proportion is not always observed and very often an excessive quantity injures the product. At the plantations, the trees being from 5 to 8 years of age, the factory receives and treats latex from trees of different ages. In some cases, chemicals have to be added to the fresh latex to delay coagulation, when the plantation is distant from the factory. As the consumer is now obliged to make long and expensive tests to know what he is buying, referring to the establishment of a testing station as has been suggested by the Rubber Growers' Association of London, Messrs. Grisar remark that, while it offers apparent benefits to consumers, it does not remove the initial cause of complaint—the mixture of several qualities in one shipment.

They suggest the installation in the chief plantation districts of special depots solely intended for the rapid coagulation of the latex by the processes now admitted to be the most effective, without any admixture of needless coagulants or anti-coagulants. In conclusion they say that the avoiding of organic fermentations and the form the rubber will assume in the central factory (whether Crêpe or Smoked Sheet) will in no degree affect its intrinsic value. The advantage of the system, it is added, will be the securing of a crude material as homogeneous as Pará.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of October, 1913, and for the first ten months of five fiscal years, beginning January 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
October, 1913.....	$265,798	$136,840	$643,285	$1,045,923
January-September ..	1,891,785	982,953	6,546,215	9,420,953
Total, 1913.....	$2,157,583	$1,119,793	$7,189,500	$10,466,876
Total, 1912.....	2,125,333	1,148,716	6,623,334	9,897,383
Total, 1911.....	1,909,150	1,487,563	5,935,113	9,331,826
Total, 1910.....	1,759,590	1,906,961	4,687,399	8,353,950
Total, 1909.....	1,469,272	1,288,705	3,478,438	6,236,415

The above heading, "All Other Rubber," for the month of October, 1913, and for the first ten months of three fiscal years, beginning January 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
October, 1913.....	$237,116	$75,207	$312,323
January-September	3,244,015	429,668	3,673,683
Total, 1913.....	$3,481,131	$504,875	$3,986,006
Total, 1912.....	2,759,339	485,908	3,245,247
Total, 1911.....	2,080,517	480,915	2,561,432

Crude Rubber During 1913.

THE principal feature of the crude rubber market during recent years has been the gradually increased importance of plantation rubber as a factor in the situation. Brazilian exports have practically been stationary, while those from the East have advanced by leaps and bounds. These conditions are shown by table A.

TABLE A.

PRODUCTION OF PLANTATION AND PARA RUBBER.

Compiled by S. Figgis & Co., London.

	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Ceylon and India, tons	230	350	600	1,430	2,750	6,300	11,590
Malaya, tons	780	1,450	3,250	6,800	11,400	22,200	35,410
Total plantation, tons	1,010	1,800	3,850	8,230	14,150	28,500	47,000
Brazil, tons	....	....	42,000	40,500	39,500	40,500	39,000

The third important source of rubber, Africa, has shown a decrease, according to table B, which has been more than covered by the receipts of plantation rubber.

TABLE B.

WORLD'S SUPPLY OF RUBBER.

	1912. tons.	Estimated. 1913. tons.
Wild—		
Brazil	40,500	39,000
West Africa	13,800	10,000
East Africa, Penang, Borneo, Rangoon, Assam, Madagascar, etc.	4,000	3,000
Central America, Mexico, etc.	2,500	2,000
Guayule	7,000	2,000
Jelutong, etc.	2,700	2,000
Total Wild	70,500	58,000
Plantation—		
Total Plantation	28,500	47,000
Grand total	99,000	105,000

Table B shows the world's comparative production of 1912 and 1913, according to latest estimates; the grand totals being: 1912, 99,000 tons, and 1913, 105,000 tons. The increased production of 6,000 tons arises as follows:

Increases. Tons.		Decreases. Tons.	
		Brazil	1,500
Plantation	18,500	West Africa	3,800
		East Africa, etc.	1,000
		Central America, etc.	500
		Guayule	5,000
		Jelutong, etc.	700
	18,500	Total	12,500
		Net increase	6,000
			18,500

The increased production of plantation rubber is not an accidental or transitory occurrence, but part of the progress which has been taking place of recent years as shown in table A.

The increased output of the eastern plantations was thus 18,500 tons, of which 12,500 tons were offset by the reductions shown in other descriptions; the balance of 6,000 tons appearing in the increase of the world's product from 99,000 to 105,000 tons.

Perhaps the most notable feature of the year's rubber trade was the fall in prices and the establishment of a premium in favor of Brazilian rubber, through the slower rate at which it met the reduction established in plantation rubber. A comparison of the respective prices at typical periods shows the following results:

COMPARATIVE LONDON PRICES.

	Fine Hard Pará.	Plantation.
December 24, 1912	4s. 7¾d.	4s. 7¼d.
February 25, 1913	4s. 0½d.	4s. 0½d.
April 26, 1913	3s. 4½d.	3s. 2½d.
May 24, 1913	3s. 9 d.	3s. 3 d.
June 25, 1913	3s. 8¾d.	2s. 11 d.
July 26, 1913	3s. 7 d.	2s. 9½d.
August 23, 1913	3s. 9½d.	2s. 8 d.
September 25, 1913	3s. 7½d.	2s. 4 d.
October 27, 1913	3s. 1½d.	2s. 2 d.
November 22, 1913	3s. 2 d.	2s. 4¾d.
December 23, 1913	3s. 1¼d.	2s. 3¼d.

The lowest point touched for plantation rubber was 1s. 11d. on September 17. Thus starting the year 1913 about on a level with each other, the two standards closed the year with a difference of 10d. per pound, the premium for fine Pará having meanwhile touched 1s. 3½d. per pound.

While the relative merits of Pará and plantation rubber have been freely discussed, the absorption of the largely increased shipments of the latter is the best proof of its having been taken up by a large number of manufacturers, who have recognized its advantages. The opinion has been expressed that the fall in prices has been beneficial to the plantation rubber industry in two ways: by directing attention to plantation rubber, and by enforcing on the producers a policy of economy which, when fully carried out, should effect a saving of 25 per cent. to 50 per cent. in the cost of production.

AFRICAN RUBBERS.

Table B shows a reduction of 3,800 tons in the production of West Africa which is partly reflected in the receipts from the Belgian Congo at Antwerp. The total figures, as shown by Grisar & Co., illustrate the comparative movements of Congo and plantation rubbers at that port:

ANTWERP RECEIPTS.

	1912. tons.	1913. tons.
Belgian Congo	3,230	2,886
Plantation	1,403	2,033
Various descriptions	145	121
Total	4,778	5,040

The reduction in shipments from the Belgian Congo has thus been more than offset by the increased receipts of plantation rubber.

This decrease in Antwerp arrivals is the direct consequence of the effects produced by the fall of prices in Europe, which represents about 58 per cent. for Congo rubber, 52 per cent. for plantation and 22 per cent. for fine Pará. The Belgian government has endeavored to meet the situation by a reduction in the export duties and by eliminating them on certain low grades.

In this way, coupled with the reduced rates of transport and the improvement of quality, it is hoped that the rubber industry of the Belgian Congo will be able to overcome the effects of the present crisis.

The plantations belonging to the Belgian government have been developed on a normal scale during 1913; now representing about 2,500 acres under *Hevea*, 3,400 acres under *Funtumia* and 1,000 acres under *Manihot*.

Amsterdam arrivals for 1913 were 1,039 tons, of which 989 tons was plantation rubber, as compared with total of 495 tons in 1912, including 425 tons plantation.

Rotterdam arrivals for 1913 were 2,101 tons as compared with 1,375 tons in 1912; the excess being divided between plantation and Austrian descriptions.

M. Jean Roederer, in his annual report from Hâvre, shows the following comparative imports of the leading qualities received at that port:

HAVRE RECEIPTS.

	1912. tons.	1913. tons.
French Congo	1,077	1,182
Various descriptions	890	252
Pará	3,695	3,493
	5,662	4,927

The fall in prices during the year in the principal qualities represented for Congo about 51 per cent., and for Pará about 30 per cent. Generally speaking, the situation of rubber is considered sound, stocks being normal and an improvement being in prospect for 1914.

TABLE C.

WORLD'S CONSUMPTION OF RUBBER.

Europe.	1912. tons.	Estimated. 1913. tons.
England	14,500	17,500
Germany, Austria, etc.	16,000	16,500
France	9,500	9,000
Russia	9,000	11,500
Italy, etc.	1,500	1,300
Japan and Australia	1,000	2,000
America and Canada	47,500	47,200
	99,000	105,000

As shown in table C, by Messrs. S. Figgis & Co., there has been an increased consumption of 6,000 tons in 1913 as compared with 1912, made up as follows:

	Increases tons.	Decreases tons.
England	3,000	...
Germany, Austria, etc.	500	...
France	...	500
Russia	2,500	...
Italy, etc.	...	200
Japan and Australia	1,000	...
America and Canada	...	300
Total	7,000	1,000
Net increase	.....	6,000
Total increase	.....	7,000 tons.

Eliminating the smaller quantities, the increase is mainly in the English and Russian consumption, while the figure of 1913 for America and Canada is estimated at about the same as 1912.

Such are the principal facts as shown by the statistical returns for 1913 so far to hand.

ENGLISH RUBBER STATISTICS.

According to official statistics, the last three years have shown a marked increase of English crude rubber imports and re-exports. The totals are as follows:

	1911.	1912.	1913.
Imports (tons)	46,121	56,024	71,567
Re-exports (tons)	29,081	37,050	45,829
Consumption, (tons)	17,040	18,974	25,718

The quantity for 1913 was derived from the following sources:

French West Africa	1,027
Peru	1,324
Brazil	16,527
Gold Coast	678
Straits Settlements	15,377
Federated Malay States	10,059
Ceylon	6,826
Other countries	19,749
Total	71,567

Imports of 1913 exceeded those of 1912 by 15,000 tons. One-half of this surplus was re-exported and the other half went to increase consumption.

Applying the same calculations to the statistics of gutta percha (including balata) the following results are shown:

	1911	1912	1913
Imports, tons	3,300	2,872	5,561
Re-exports, tons	469	304	443
Consumption, tons	2,831	2,568	5,118

The increased imports have been absorbed by English consumption, only a small proportion having been re-exported.

FEDERATED MALAY STATES RUBBER EXPORT.

According to information cabled by the Federated Malay States Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of December amounted to 5,859,840 pounds as compared with 4,618,880 pounds in November, and 3,693,929 pounds in the corresponding month of 1912.

Appended are the comparative statistics for 1911 and 1912:

	1911	1912	1913
January	1,329,170	2,730,576	4,772,880
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
July	1,581,993	2,695,861	3,989,440
August	1,651,845	3,655,535	5,293,120
September	1,677,062	2,968,121	4,480,000
October	2,182,857	3,215,231	4,838,400
November	2,104,317	3,121,473	4,618,880
December	2,147,859	3,693,929	5,859,840
Total	19,695,330	34,732,415	52,557,409

It will be seen that the total export amounted to 52,557,409 pounds (23,463 tons) as compared with 34,732,415 pounds (15,506 tons) in 1912 and 19,695,330 pounds (8,792 tons) in 1911. The rubber exports of the Federated Malay States display a continuous advance. The figure of December, 1913, is the highest monthly amount as yet recorded.

CHANGE IN FIRM OF M. A. RITTER & CO.

Messrs. M. A. Ritter & Co., of London, announce the change in style of their firm to Ritter, Ritter & Co. The partners are Mr. Otto Ritter, Sr., and Mr. O. H. Ritter, Jr., and the change was made by agreement with their former partner.

Some Vigorous Views From Singapore.

Editor, THE INDIA RUBBER WORLD, Dear Sir:—

IT is rumored here that the Shipping Conference here and at home have arranged for the freight on rubber to be reduced to 60s. per ton (50 cubic feet) on rubber consigned to the London market, and that the rate per ton from Singapore to New York be raised to 80s. per ton—a difference of 20s. per ton in favor of London; being an attempt on the part of the Shipping Conference *cum* Rubber Growers' Association *cum* rubber dealers to keep up the profitable market—to themselves—at present existing in London.

The humor of recent events is very striking to anyone who is acquainted with the composition of our London market. The noble efforts of the Rubber Growers' Association to cut their own throats politely by reducing their trading profits on the rubber they handle, in favor of better market conditions for the produce from the estates they direct, are truly ridiculous. For months they have been sitting in secret conclave trying to square the circle, and at last—lo! behold! the mountain was in labor and there was evolved a rat—in mouse's clothing!

They have not quite squared the circle, but they have evolved a sort of dodecahedron, which at a distance might appear as a sort of a circle to a casual observer. As you will have already seen, the thing is a *reductio ad absurdum*, and in reality plays directly into the hands of the Dreadful Dealers they had called upon themselves to suppress.

As they are own cousins to these same dealers, and are suspected of having a sneaking interest in the profits of same, to say nothing of fat commissions of percentage of the crop, etc., etc.—*vide* the Kamuning Co., meeting last November—it is a bit difficult to see how they are going to achieve the wonderful results that they have promised—on the wait and see principle. As most of the members of the Rubber Growers' Association are members of the Shipping Conference, their last little effort in creating a widely discriminate freight rate in favor of their own particular market doesn't look like the essence of sincerity to a casual observer.

Arising out of this situation, I put forward the proposition that the American buyers combine to charter steamers of their own to convey their rubber direct from Singapore to New York, at a cost of about 30s. per ton—a saving of 50s. a ton. As there are about 1,400 pounds net weight of average rubber per ton freight the saving would be about 3d. (6 cents gold) per 7 pounds. I need say no more to keen business men. If America would combine to take say 3,000 tons net of rubber per month from Singapore, equal to about 4,000 tons freight, then counting four months to a round trip, four steamers of 5,000 tons would be required—costing about £6,000 per month, on a three years' charter. This would amount to £2 per ton net weight of rubber or 30s. per freight ton if nothing else were carried, and the boats returned here empty. As, however, they would certainly bring cargo here, and take a certain amount back, it may safely be said that the actual cost of the rubber freight would amount to little more than 20s. per freight ton! I give you the project for what it is worth. America will certainly buy 3,000 tons per month from us next year.

The principal feature of the present movement in local planting circles appears to be a desire to conform to manufacturers' requirements—if only the manufacturers will say what it is that they require. This being an *impasse*, there seems only one way out of it. The London agents, dealers and directors having shown that they do not seriously mean to injure their own personal profits for the benefit of the shareholders—anything that they may do or profess being only a shadow without much solid substance, as far as we can make out—there is left only one alternative—for headquarters to meet headquarters. Let the consumers in America, say, combine together to support a buying agency here. This agency will be able to obtain exactly what the consumers require, and by means of subsequent elimination of unearned profits now made, will be able to offer planters here higher limits than ordinary dealers can do. The effect of this will be to cause planters to produce certain standard types to the buying agency's requirements, knowing that by conforming to this they can obtain a ready, immediate cash sale at a higher price in the Singapore market than they can hope to do by any other method of the disposal of their product. A planter will thus engage to sell the whole of his output to the buying agency at current rates—he guaranteeing that his rubber shall be prepared up to certain fixed standards.

The manufacturers will soon get to know the qualities of these standards, and will know that for qualities A, B and C, etc., they will require to use known formulae, X, Y and Z.

Handling the rubber will then become a very simple proposition for manufacturers—as they know that their own buying agency here will only buy the right stuff—and it will reach them direct from the estate, so to speak; at least every parcel can be traced direct to the estate, so that any parcel which did not come up to the standard would at once bring trouble in heaps for the offending estate. At first the expense of repacking here must be borne, until it was found that the estates could be trusted. Many estates could, however, be so trusted right away. This would do away with the difficulty at present experienced in New York—complaints as to quality and condition, etc., which are often difficult to decide after nearly two months' freightage, and are the cause of much trouble and expense—due very largely to the present methods employed of buying "a pig in a poke." Very few American manufacturers really know where their rubber comes from, and a great deal of it is faked.

This could not happen to them with their own buying agency, and with a receiving and forwarding agency in New York. The cost of a buying agency here, on salary, would amount to about $4,000 to $5,000 gold per month, for a staff up to say 30,000 tons per year, and the saving to buyers would be about 4 to 5 per cent. on present methods—to say nothing of maintaining a steady market.

Very truly yours,

SINGAPORE.

WHY SEND RUBBER TO LONDON?

In a recent editorial, the "Times of Ceylon," in discussing the above subject, says:

"The advantages of selling rubber on the local market are becoming so obvious that directors will find their position an awkward one when called upon by shareholders to explain why they continue to throw away pence per pound in the sale of their product . . . when the rubber goes via London to, say, America. . . . It cannot be good for the industry to allow the product to be bled this way, when consumers display such readiness as they do to take the rubber direct from the country of production. . . . It is for the shareholders to see whether they are prepared to continue a system which practically amounts to a subsidization of London houses at the expense of their pockets."

PUTTING IN MORE RUBBER.

In a recent speech to the Legislative Council of the Straits Settlements, the Governor said:

"The cultivation of rubber does not as yet appear to have suffered any serious setback. Where estates have had some other form of cultivation together with rubber, whether it is cocoanuts, gambier or tapioca, the tendency to remove the second crop shows few signs of diminution."

The Editor's Book Table.

RUBBER AND RUBBER PLANTING. BY R. H. LOCK, SC. D. New York, 1913. G. P. Putnam's Sons. [Cloth, 8vo, 245 pages.]

IN his endeavor to make his book suitable for as wide a circle of readers as possible, Dr. Lock has combined the science of rubber planting with general information of use to the prospective planter. His experience as Assistant Director of the Botanic Gardens, Ceylon, has been of value to him in the preparation of this volume, which embraces a description of the planting, harvesting and manufacturing work involved in bringing rubber from the field to the consumer.

Hevea RUBBER ON SWAMPY LAND.

Starting with the botany of rubber, and the physiology of latex production, Dr. Lock deals with tapping and other points connected with harvesting operations. This leads up to a description of factory work on the estate, including the transport of latex, coagulation, washing, drying, crêping, smoking and smoke-curing. Dr. Lock remarks that plantation rubber comes on the market as biscuit, sheet, crêpe and block, any of these forms being either smoked or unsmoked, and the unsmoked varieties differing much in color. The thickness and other characteristics of the various types differ very considerably, and, it is added, reflect the indecision of manufacturers as to what is best suited to their requirements, thus militating against uniformity of product. On the other hand, similar grades of rubber, produced on different estates and from trees of different ages, appear to differ considerably in strength and resiliency. A chapter is devoted to the pests and diseases of *Hevea*, including insects, fungus and root diseases, as well as other troubles of this nature.

FOREST SCENE, SHOWING PREPARATION OF HARD PARA RUBBER.

While *Hevea Brasiliensis* is recognized as the plantation tree *par excellence*, the merits of other varieties are likewise discussed in a special chapter, the final section of the work dealing with the manufacture and vulcanization of rubber goods.

Dr. Lock has assembled a large number of facts bearing on the cultivation, preparation and manufacture of rubber, in such condensed form as to be suitable for the general reader as well as for the trained rubber expert. Twenty-two photographs serve to illustrate the text, a few of which are reproduced.

Hevea RUBBER AND TEA.

TRANSACTIONS OF THE AMERICAN INSTITUTE OF CHEMICAL Engineers: Vol. V, 1912. Illustrated. Published by the Institute and for sale by D. Van Nostrand Co., New York. [Cloth, 8vo, 284 pages, Price six dollars.]

As the combined result of expert investigations by almost a score of scientists noted in their respective branches, the "Transactions" of the above-named association contain a number of interesting papers. In dealing with the question of industrial efficiency, Mr. Wm. M. Booth remarks that the chemical engineer can only take his legitimate place when he can transpose the symbols of the chemist to the dollars, cents and percentages of the business world. The highest type of his endeavor is connected with the invention and perfecting of new processes, later on establishing useful industries, which may attract capitalists of ability, courage and means to embark in such new enterprises. Not less important is the introduction of economies in processes already established.

Statistics of the capital invested in the United States in manufacturing show an advance from $533,245,000 in 1850, with 957,059 employes, to $18,428,270,000 in 1910, with 6,615,046 hands. This gain is largely due to the improved processes introduced by the expert chemical engineer. At the same time, consulting engineers can often render essential service by disapproving the proposed purchase of equipments which a concern has never needed and should not buy.

In direct connection with this application of industrial efficiency, it is of interest to note, from the paper of Professor

M. C. Whitaker, that Columbia College, New York, has established a three-year course of study leading up to the Post-Graduate Engineering Course. The former includes analytical geometry, chemistry, shop work, calculus, physics, statics and surveying.

Professor Whitaker's paper is supplemented by a number of illustrations, showing the principal features of the laboratory attached to the new department. This laboratory it is proposed to use both for instruction and investigation.

A subject of importance is dealt with in Dr. L. H. Baekeland's paper on the "Protection of Intellectual Property in Relation to Chemical Industry," in which the various aspects of the subject are fully considered. Another paper of a general character is that of Mr. W. M. Booth, on "Water for Industrial Purposes," in which it is pointed out that before deciding on the location of a new factory a thorough study should be made of water conditions, under the heads of manufacturing requirements, drinking water and water for fire-extinguishing purposes. It is recommended that two independent sources of supply should be available in each case.

"The Beehive Coke Oven Industry of the United States" is treated by Mr. A. W. Belden, of the Bureau of Mines, in a comprehensive paper in which the history of the coke industry since its establishment in 1817 is outlined, as well as its present conditions. Plans of coke furnaces supplement the text. "Acetylene Solvents" are discussed by Professor J. H. James, under the heads of laboratory methods and tests and laboratory results, accompanied by a series of diagrams.

Cement and allied subjects are handled in six papers: "The Temperature Gradients in Setting Portland Cement," by Allerton S. Cushman; "Potash from Natural Silicates," by Mr. Cushman, in conjunction with G. W. Coggeshall; "Setting Time of Portland Cement," by E. E. Ware; "Paving Block Impregnation," by John Hayes Campbell; "Blast Furnace Slag as Brick Material, by Professor Albert E. White; and "Potash, Silica and Alumina from Feldspar," by Professor Edward Hart.

Various other special subjects were dealt with in the following papers: "Oxygen in Petroleums and Asphalts," by Dr. S. P. Sadtler; "Decomposition of Linseed Oil during Drying," by Professor J. C. Olsen and A. E. Ratner; "Opacity of Pigments," by G. W. Thompson; "Effect of Lime Sulphur Spray on the Eyesight," by Professor James R. Withrow; and "Phenol-Formaldehyde Condensation Products," by Dr. L. H. Baekeland.

The chemistry of food products is represented by "A Chemical Investigation of Asiatic Rice," by A. S. Cushman and H. C. Fuller, and by "Disinfectants in Sugar Solutions," by George P. Meade.

The "Transactions" of this representative institute thus afford a view of recent technical progress in the various branches of industrial science. By grouping the papers a still clearer idea is gained of their application. Not only as a record of the work of the institute, but as a standard text book, the chemical engineer will appreciate the value of this summary, reflecting, at it does, the latest achievements in the world of technology.

GRENIER'S RUBBER ANNUAL 1913. KUALA LUMPUR. FEDERated Malay States. Charles Grenier & Son. [Paper, 64 pages, 12 x 9, with 80 illustrations.]

In the editorial introduction to this welcome annual the anticipation is expressed that the time of tribulation through which the rubber trade is now passing will come to a happy ending. The industry, it is added, will come out of the present ordeal like refined gold. Reviewing the late developments of the rubber trade, it is remarked that, barring the question of prices, the rubber industry has not had much to disturb the even tenor of its way. Outputs have in most cases far exceeded anticipation. A satisfactory feature of the outlook is the prospective abolition of the Federated Malay States export duty on rubber.

The literary matter in the Annual maintains its accustomed standard; the life of Charles Goodyear being dealt

MANAGER'S BUNGALOW, BROWNCOMET ESTATE.

with by Mr. Edward Salmon, while Mr. Arthur Shepard discusses the "Wild Rubber Position" in connection with the elimination of inferior grades. "The Case for Standardization" is outlined by Mr. G. S. Montague, and an interesting comparison of plantation costs in Malaya, Ceylon, Sumatra and Java is furnished by Mr. J. F. Ashby. To those financially interested in rubber ventures, an article by Mr. W. A. Tinnock on the "Valuation of Rubber Shares," will specially appeal.

As usual, the largest portion of the "Annual" consists of

SIX-YEAR-OLD RUBBER, ALLAGAR ESTATE.

illustrated reviews of some 80 plantations, thereby bringing the reader into close touch with Malayan conditions.

The illustrations, two of which are here reproduced, have been artistically executed and form an attractive feature of the "Annual."

DR. DE TOLEDO SUPERSEDED.

The Bureau of Foreign and Domestic Commerce, Washington, D. C., has informed THE INDIA RUBBER WORLD that Dr. Pedro de Toledo has been superseded as Brazilian Minister of Agriculture. It is understood that his successor is Dr. Edwiges de Queiroz. The late minister had, it will be recalled, been prominent in the development of the "Defesa da Borracha," or Bureau for the "Defense of Rubber." Reports state that the policy of this bureau has not been abandoned, but that its scope has been greatly decreased. It is further stated that Dr. Toledo has been appointed by the President as Brazilian Minister in Rome.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

ACCORDING to reports in the trade, business has not opened up so briskly as might have been generally desired. There is a feeling all along the line that the conservatism which permeates nearly all lines of business is still to be observed in the rubber business. The one exception seems to be rubber clothing, the manufacturers of which are busy. Automobile tire makers are not specially busy, and in some factories hands have been laid off. In mechanical goods there is something doing, but manufacturers are not boasting about it. Druggists' goods are in fair demand, with some complaints of close prices and competition. Rubber footwear producers have had their troubles this season, as winter has been more than usually backward, tho at present writing the weather is such that large inroads will be made in retailers stocks, and this may later help the manufacturers.

* * *

Speaking of rubber footwear, the trade looked forward with some eagerness, not unmixed with anxiety, to the announcement of prices and terms of the United States Rubber Co. Many in the trade here would prefer to have such changes made March 1, nearer the end of the season, rather than in January, which is the middle (and this year almost the beginning) of the retail demand for rubbers. The announcement was made promptly January 1, and the changes in list prices were practically nil, a cent reduction on a few lines. But the terms were changed, the discount being increased from 15 and 5 per cent. to 25 and 5 per cent., no change being made in the jobber's discounts. The average reduction shown, therefore, was nearly 11 per cent. on the net prices of last year.

As per their previous policy, the other rubber companies sent out their new price lists, basing their net selling prices on those of the United States Rubber Co. The prices and terms of the Hood Rubber Co., the Apsley Rubber Co. and the Beacon Falls Rubber Shoe Co. figure out about a 5 per cent. differential from the United States company's prices, tho here and there a difference of a cent or two is shown in certain items in the catalogs.

* * *

Nearly three years ago, or to be explicit, on the night of February 2, 1911, the storehouse of the Converse Rubber Shoe Co. at Malden was set on fire, it is claimed, by sparks from a locomotive of the Boston and Maine railroad. About the middle of January the long delayed suit against the Boston & Maine Railroad Co. for $90,000 damages was taken up by the court, and on one day an extraordinary proceeding was introduced—namely the transfer of the scene of the trial from the court house to the fire station. The reason for this was the summoning as witnesses of a large number of firemen. The chief engineer demurred, however, against the absence of so many firemen from duty. Therefore the auditor and the attorneys for both sides proceeded to the fire station, and the testimony was taken without in any way crippling the fire service. The result of the hearing had not been reported at the time this letter is written.

The Converse Rubber Shoe Co. is the defendant in an action brought by Eugene Fuller, of Fall River, who claims that he was granted a patent April 19, 1910, for a rubber shoe protector, and that he entered into a contract with the Converse company to allow it to manufacture the goods under the name of the Fuller Rubber Shoe Protector, for which the company was to pay him two and one-half cents a pair on men's shoes and two cents a pair on women's shoes in which the invention was used. His complaint is that the company did not use its best efforts to dispose of goods so made, and that it never made returns to him. He claims $50,000 in his action against the company.

For a quarter of a century William F. Mayo & Co. have occupied the big warehouse at 197 to 203 Congress street, doing an immense rubber shoe jobbing business, their trade extending over the entire country. That building now bears "To Let" signs in the windows, and because of that, it has become known that this old-established firm will remove to the big nine-story building 286 to 290 Summer street, which it has leased for a long term of years. The new location is just beyond the bridge in the new warehouse and manufacturing district, and not far from the South Terminal Station. The building is of most approved construction and is excellently adapted for the business.

* * *

A few months ago your Boston correspondent wrote an article for THE INDIA RUBBER WORLD on the Tango craze and its influence on footwear, especially the use of rubber in the soles of dancing shoes. For a heading or title to the article a particularly appropriate term was evolved, i. e., "Non-Skid Shoes for Dancing." Whether a Haverhill shoe manufacturer reads THE INDIA RUBBER WORLD, or whether it is an instance of "great minds run in the same channels" your correspondent knoweth not, but the shoe manufacturer has adopted the term and is advertising "Goodrich 'Non-Skid' Footwear for all forms of dancing where sure footing is a prime requisite." It is stated further that "the stately minuet which they tell us is being revived can be danced easily and gracefully with Goodrich 'Non-Skid' Footwear. In the hesitation waltz the dancers hesitate at just the proper moment with 'Non-Skids,' and the fitting qualities are so excellent that in the horse trot the wearers can cavort as much as they please with a perfect sense of security and not the least danger of casting a shoe."

* * *

There are few men who have been in the rubber shoe business for over a decade who are not acquainted with Chester J. Pike, who for some years had charge of the United States Rubber Co.'s business in Boston when it had its headquarters at the corner of Bedford and Chauncy streets, where the Boylston Bank is now situated. Mr. Pike is now connected with the advertising agency of A. W. Ellis Co., and in this connection he has charge of the general advertising of the "Hubmark" rubbers, manufactured at the Boston Rubber Shoe Co.'s factories. That this advertising campaign has been so successful is due to Mr. Pike's thorough knowledge of the rubber footwear business. The novel and efficient local and general advertising, the window cards and circulars were originated by him.

* * *

A new company has been formed for the manufacture of rubber heels and soles at Hanover, Massachusetts, under the title of the Hanover Rubber Co. A new factory 50 x 100 feet is just completed. Robert E. Parent is superintendent of the factory, and George J. J. Clark is president.

BOSTON WOVEN HOSE & RUBBER CO.'S NEW MILL ROOM NEARING COMPLETION.

The new building designed for mill and calender operations and storage of raw materials, which represents the latest addition to the Boston Woven Hose & Rubber Co.'s plant at Cambridge, Massachusetts, is now nearly finished. The work of installation is progressing rapidly, nine new 60-inch mills with three 30-inch rotary refiners being already in operation; and the machines are being moved from the old buildings. One of the features of the mill and calender room is the mastic flooring, which is considered far superior to either cement or wood, eliminating the possibility of dust, chips or other foreign material getting into the compounds.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

SOME INTERIOR VIEWS OF THE FIRESTONE FACTORY.

THE Firestone Tire & Rubber Co., of Akron, Ohio, has recently sent an expert photographer through the different departments of its factory and he has taken some exceedingly interesting pictures. There are nine in the series. The first picture shows the room where the crude rubber is put into the vats of hot water and soaked and run between rollers innumerable times to free it from the various kinds of dirt which the *seringueiro* seems to take great pleasure in incorporating in

No. 1. CALENDER ROOM, WHERE THE FABRIC IS FRICTIONED.

the biscuit which he ships to market. The second picture shows the drying room, with the long sheets of crépe-like rubber, which has been well masticated by the calender rollers, hanging up to dry. The third picture shows the compounding room, where

No. 2. BUILDING INNER TUBES.

the perfectly clean, dry rubber is mixed with various chemical ingredients to give it endurance and wearing qualities.

Then there follow six photographs showing the actual process of tire making. These six pictures are herewith reproduced.

No. 3. WRAPPING INNER TUBES BEFORE VULCANIZING.

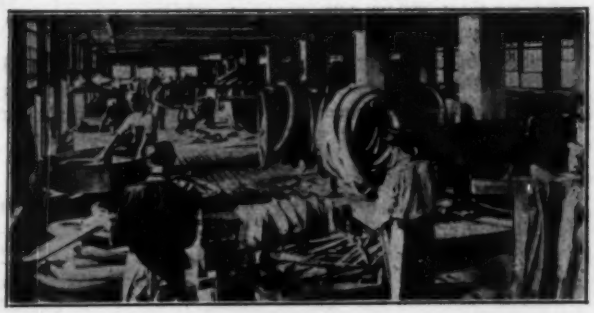
No. 1 shows the calender room, where the Sea Island cotton is run in between steel rollers with the compounded rubber until the fabric is entirely impregnated with the rubber. The next picture shows the department where the inner tubes are constructed. This work requires skilled workmen, because defective work in the making of an inner tube is, of course, disastrous

No. 4. HYDRAULIC HEATERS, WHERE TIRES RECEIVE FIRST CURE.

to its usefulness. The third picture shows another department, where the inner tubes are being wrapped before vulcanizing. Then comes a view of the department where the tires get their first cure, in hydraulic heaters. This is followed by a view of

No. 5. VULCANIZERS, WHERE TIRES RECEIVE FINAL CURE.

the vulcanizing department, where the tires get their final cure, in gigantic vulcanizing ovens. The last of the views shows the inspection department, where the inner tubes, having been constructed and wrapped and vulcanized, are very minutely gone



No. 6. FINAL INSPECTION OF INNER TUBES.

over by skilled inspectors so that none shall leave the shop which has any discoverable defect.

The annual stockholders' meeting of the Adamson Machine Co. was held on January 13 at the company's office at Akron, Ohio, when the regular dividend was declared and the board of directors of the past year re-elected, these in turn electing the following officers: Alex. Adamson, president and general manager; W. E. Slabaugh, vice-president; R. B. Koontz, secretary and treasurer.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Workmen's Compensation Act, as made compulsory by the Legislature of Ohio in 1913, is followed strictly by all the rubber companies in Akron, for the mutual benefit of the employer and the employe—especially the latter. Part of the employes' wages, a certain fund assessed upon the employer and a certain amount given by the State—which comes chiefly out of the amount collected by the State insurance department—constitute the fund from which compensation is paid for injuries and death. The maximum amount that will be paid in case of death is about $3,000. The weekly benefits are one-half to two-thirds of the employe's wages—in no case exceeding $12 per week.

The commission that has the assessment in charge has made some very peculiar findings, holding most employes in reclaiming plants at practically twice what the regular rubber worker is charged, altho the amount of danger in the various cases may be almost identical. This no doubt will be remedied after the Commission has secured more information and can use the experience of similar departments in other States in making an actuary's table which is fair, complete and based wholly upon experience. The writer suggests that if this Commission would investigate thoroughly the results as found by the German government under their compensation act it might be of much help in ascertaining the rate of risk which should be collected from each employer. The writer also suggests that the law should be amended so that the employer would not be liable in certain cases under the compulsory law and also liable to a separate suit instituted by the injured, and in other cases leaving it to the injured workman's option whether he cares to take under the State compensation law or sue separately, thus compelling the manufacturer not only to carry insurance for employes with the State, but also to carry a separate insurance in outside companies.

* * *

The first annual stockholders' meeting of the Mohawk Rubber Co., incorporated in March, 1913, was held January 19 at its office in East Akron, with about 35 present. The company has made remarkable progress during its short career. It purchased the plant and all holdings of the Stein Rubber Co., and is now reported as having total assets of $448,891; $35,670 in real estate and buildings, $67,228 in machinery and plant, $48,100 stock on hand, $20,198 bills receivable, $46,302 accounts receivable and $4,890 cash on hand.

Outside of the $350,000 capital stock there are very few liabilities, and these consist of bills due for merchandise, machinery, borrowed money, etc., amounting to $45,990. The surplus and undivided profits amount to $52,899. This financial report is for November 1 last. The company's sales to November 1 amounted to $184,877.

The time of the annual meeting was changed to February. The following directors were elected: R. M. Pillmore, C. D. Paxson (who is general sales manager of the Crescent Motor Car Co. of Cincinnati), M. E. Mason (former Morgan & Wright and United States Tire Co. district manager), C. W. McLaughlin (former assistant cashier of the Diamond Rubber Co.), J. K. Williams, F. J. Mishler, S. S. Miller (general manager of the company and former head of the Buckeye Rubber Co.) and Homer L. Rose (cashier of the Commercial & Savings Bank of Canton).

Mr. Pillmore was re-elected president, M. E. Mason, secretary, and C. W. McLaughlin, treasurer. The company will add a story to two wings of the plant and increase its working force this year.

* * *

A test race to determine whether the speed possibilities of the flying machine have equaled or surpassed those of the automobile was held January 21 at Los Angeles, California, between Barney Oldfield, who holds a mile record of :36 2-5, and Lincoln Beachey, who skimmed through the air over that distance in :36 flat. This race resulted in victory for Oldfield. This is not the first race of the kind ever held, but is the first between two such speed masters, and is a severe test of air and land crafts.

* * *

Alexander Chatelain, one of the pioneer mold and die sinkers of the Akron rubber industry, has organized The Chatelain Mfg. Co., located at the corner of South High and South streets, Akron, for the manufacture of all lines of rubber molds and dies. G. H. Stanton is vice-president and assistant manager, and W. H. Morgan is secretary and treasurer.

* * *

The State of Ohio has passed legislation by which in a few years the highways will be paved connecting the 88 county seats of the State. This will cost millions of dollars and will be a great boon for the various rubber factories of the State. It will add approximately 4,000 to 5,000 miles of improved paved roads. This improvement comes under the control and direction of the State Highway Commission.

* * *

With the exception of one or two rubber plants, the Akron factories during the last two months have not been running full force, but to protect and retain their help they have retained most of their employes and have either cut down the number of hours per day or the number of days per week for each. The various companies expect to be running full time in the near future.

* * *

Mr. C. B. Myers has resigned as general manager of The Swinehart Tire & Rubber Co. His successor will be chosen soon.

* * *

The plans of The Buckeye Rubber Co. for three new buildings are almost completed and work will be begun as soon as the weather permits.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

FOR the past month Chicago's interest has been centered in the automobile trade. The annual Automobile Show, held January 24-31, at the Coliseum and the First Regiment Armory, excelled all its predecessors. The large attendance, was, without doubt, due to the boom in the automobile industry during the last year. Eighty-one gasolene cars, nine electric automobiles and one hundred and sixty accessories were exhibited, in addition to a number of cyclecars. Among the exhibitions this year were many striking and novel ideas in construction. According to experts, a great advance has been made in body and motor improvement, all tending toward comfort and protection.

In addition to Chicago automobile owners, show visitors included several thousand out-of-town dealers in motor cars and accessories. Altho some of the large tire manufacturers were finely represented, others were conspicuous for their absence. This withdrawal is a new experiment, and if it in no way affects the trade, will continue.

In looking over the assets and liabilities of different branches of the Chicago rubber industry for the year 1913, our attention is drawn to the immense increase in the rubber mail order business. Dealers have always regarded the mail order concern as an outcast, but it has now become a competitor which cannot be overlooked. Chicago is the best representative of this business, for it is the home of the two largest mail order houses in the world, viz.: Sears, Roebuck & Co. and Montgomery Ward & Co.

Five years ago the rubber business of the larger of the two,

Sears, Roebuck & Co., was almost negligible; one man might have handled it all. Today almost every conceivable article made of rubber is handled; in fact, many departments and managers are required for this branch of the business, which alone in 1913 amounted to $2,000,000. Mr. Kettleworth, manager of the men's rubber coat department, states that when the company started in business this department was practically non-existent, but that the trade in these garments has doubled every five years, and that in 1913 it was very large.

The tire department does the greatest volume of business. In 1911 the sales were not worth mentioning, but in 1912 they amounted to $350,000, and in 1913, $950,000. This includes bicycle, auto and carriage tires. Strange to say, the best of the mail order tire business is done in the big cities, New York being the largest customer.

The bicycle demand is confined largely to country trade. Tho this vehicle is seldom seen in a large city, it still is and probably always will be the joy and necessity of the country lad. In 1913 one brand of bicycle tire reached a sale of 40,000, selling at the rate of $4 per pair.

"This upward stride is but a beginning," states the manager, Mr. Choates.

The mail order houses claim that their popularity is due to the fact that by eliminating middlemen they have succeeded in selling direct to the consumer at a reduced rate.

* * *

There has been much interest shown of late in the proposed Lincoln Highway. In fact, patriotically inclined citizens all over the country are supporting it by volunteering to assume the expenses of sections of that highway, to be dedicated as memorials. Chicago patriots have been quite interested in the novel plan of a citizen of Los Angeles, who desires, in the memory of his mother, to install at intervals along the route across Illinois drinking fountains for pedestrians and motorists. Wealthy men of Chicago, especially those in the automobile and tire business, should be among the first to support this prodigious and beneficial undertaking in honor of their "rail-splitter." One Chicago man has calculated that if 3,000 of the millionaires of this county would each contribute one mile of permanently improved road surface of the Lincoln Highway, at an estimated cost of $5,000 per mile, the road in its entirety would be accomplished.

* * *

The rubber footwear trade, which has been dull during the entire winter, was considerably cheered by the snow storm of January 18—the first of the season—and is encouraged to hope for better sales records during the remainder of the season.

* * *

The mechanical rubber goods people are enjoying a business in hose unusual at this season and due to the fact that the numerous quarries in this section have been able, owing to the mildness of the season, to work much later than usual.

* * *

W. H. Salisbury & Co., of 107 South Wabash avenue—one of the leading and oldest rubber stores in the city—have been making some very striking window displays. A recent display featured imported red rubber dolls, while including also a variety of drug sundries, raincoats, etc. A photograph of the company's store in the 70's occupied a prominent place in the window, marking the contrast between the store of that time and the thoroughly modern establishment of the present day.

* * *

The fact that Chicago policemen will not wear rubber shoes has been clearly and conclusively demonstrated. A certain firm here has followed sales to the local police with letters asking whether or not the shoes were satisfactory; and the majority of the replies having expressed dissatisfaction, stating that the shoes were too heavy, increased the natural perspiration of the feet, etc., etc., the concern in question has discontinued the manufacture of this shoe, believing that this class of men, if any, should be able to appreciate any merits it might possess.

* * *

The tire advertisement of the B. F. Goodrich Co. at the end of the down-town section of Michigan avenue is one of the best in the city. It consists of an illuminated and intermittent electric sign which shows what seems to be a fiery tire rolling through space every few seconds. It is impossible for any person, however absorbed, to pass down the boulevard without seeing this advertisement, which is, of course, designated by the firm's name in monster letters of fire.

* * *

Mr. D. Russell, of 234 South La Salle street, is to be the sole representative of the Plymouth Rubber Co., of Canton, Massachusetts, in and about Chicago, beginning February 1. Mr. Russell will carry a full line of samples and will be glad to meet all the old customers of the company, as well as any new ones.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE several rubber plants in this vicinity which have been closed down, in accordance with the usual custom at this period of the year, for overhauling of machinery, etc., and taking of inventories, have again started up, some of them with reduced help. The outlook is said to be good, and it is expected that when trade opens in the spring it will be with a rush and that overtime will become the rule in all the factories. The business for 1913 was, upon the whole, better than the average, and but one concern in this state experienced any material trouble; and this was not due to lack of orders or profitable business but to the financial difficulties that the company found itself in following the suspension and closing of the Atlantic National Bank of this city.

* * *

According to the report recently filed with the United States District Court at Boston, certain claims of the Consumers' Rubber Co., of Bristol, have been disallowed by receivers of the Walpole Tire & Rubber Co., who state that these are for preferential payments to the Walpole Tire & Rubber Co. and for damages claimed from various sources, and that the amount and validity are contested and liability disputed. The receivers recommended that the claim of the Atlantic National Bank of this city for $115,427 be referred to a master, saying "Claim on notes, liability disputed as to certain notes, value of collateral held not credited."

* * *

A second dividend of 20 per cent. was declared in the case of the Consumers' Rubber Co. at the office of the Referee in Bankruptcy a few days ago, payable on and after January 26. This makes 40 per cent. that has already been declared on claims against the concern. The plant has been running during the past three months under the direction of Robert S. Emerson, the receiver. It is understood that a new company is now forming that will take over this business and carry on manufacturing at the plant on a large scale.

* * *

Numerous and important changes and improvements have been under way at the plant of the Revere Rubber Co. in this city for several months, a number of which are now completed. The new refrigerating outfit is ready to be put into operation as soon as the weather makes it desirable to do so. Among the other buildings which have recently been added to the plant is a large storehouse, five stories in height, believed to be absolutely fireproof. A new boiler house has been erected and several of the older buildings have had one or two stories added. At the present

time the machinery is being re-arranged, so that there will be less handling of the rubber between processes. It is the intention of the management to have everything in running order by the time hot weather arrives, and then the new refrigerating plant will be put into full operation. Pipes have been connected throughout the factory, especially where it is desired to keep the more sensitive kinds of rubber goods at an even temperature, and through these cold brine will be forced.

* * *

The factory of the National India Rubber Co. at Bristol was closed down the first week in the month, when the machinery in the various departments was overhauled and necessary repairs made. Equipment has been installed in the new building recently completed. This is about 216 feet in length by 160 wide, built of brick, with cement floors, and will be used in connection with the wire manufacturing business. Stranding machines and lead presses are being installed. The building formerly used as the electric light station has been remodeled and will be used as a "slicking room." The printing department, formerly located in the basement of the packing room, is being removed to larger quarters in the old druggists' department.

The business prospects at the plant, especially in the manufacture of rubber footwear, are very encouraging, and Vice-President LeBaron C. Colt is authority for the statement that enough orders have been received to keep the plant extremely busy until well into the spring.

Achilles R. Maturi, for many years foreman in the shoe department, has resigned to accept a similar position at New Haven.

William McCaw, one of the oldest employes in length of service at the office of the National company, has resigned the post of assistant treasurer to take a position elsewhere. He had been with the National for fifteen years, going there first as assistant paymaster, later becoming paymaster, and being still more recently appointed to the position of assistant treasurer.

* * *

The final step in the complete reorganization of the Killingly Manufacturing Co., of Killingly, Connecticut, which was formerly controlled by Providence interests but is now under control of the Goodyear Tire & Rubber Co., of Akron, was taken in this city on January 16, when an issue of first mortgage 5 per cent. bonds of the company amounting to $125,000 was cancelled by the Rhode Island Hospital Trust Co., and the mortgage annulled.

The Killingly company manufactures tire fabrics. Most tire fabric mills buy the yarn and weave the fabric, but the Killingly company buys the longest staple Sea Island cotton and itself manufactures the yarn which goes into its fabric. Benjamin F. Smith, of Pawtucket, is president of the company, W. Irving Bullard is resident manager and assistant treasurer and A. M. Banister of this city is one of the directors. Mr. Banister is Rhode Island manager for the Goodyear Tire & Rubber Co. and all are officers of the latter concern.

* * *

On January 23 notices were posted in the Alice mill, at Woonsocket, and the Millville mill at Millville, of the Woonsocket Rubber Co., informing the employes that owing to the mild and open winter both mills will, for a short period, be operated on the three-quarter time schedule, alternating four days and five days a week. Superintendent George Schlosser stated that orders from week to week would determine whether the employes will be given four or five days' work a week until the stock in the storehouse is reduced. Seasonable weather, with plenty of snow or rain would have the effect of keeping the mills running full time. At present there are about 1,400 people employed in the Alice mill and about 600 at Millville, all engaged in the manufacture of rubber boots and shoes.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

THE American Ever Ready Co. of this city has made arrangements to act as Pacific Coast distributors for the product of the Thermoid Rubber Co., of Trenton, New Jersey, and to carry in stock at this point a sufficient quantity to enable them at all times to promptly supply the demands of the trade. Mr. R. F. Oakes, of the Ever Ready company, who has been east on business connected with this representation, considers this one of the most important deals in the automobile accessory line that will be made for the 1914 season and is very enthusiastic regarding the merits of the Thermoid brake lining as well as the prospects for its sale in this vicinity.

* * *

The Halliwell Co., which distributes in this part of the country the product of the Knight Tire & Rubber Co., of Canton, Ohio, has met with much success in the sale of the Knight tire, D. W. McElligott, the manager, stating that he has had a hard time securing tires fast enough to meet the demand, but that an effort will be made to secure larger shipments from the factory very early in the season. A recent trial of a Knight tire in southern California resulted in a record of 16,000 miles.

* * *

A fire which resulted in injury to a number of firemen and in property damage estimated at more than $100,000, occurred late on the afternoon of January 9 in the four-story brick building at Seventh and Townsend streets occupied as a warehouse for scrap rubber, rags and paper, by Charles Harley & Co. The fire originated in the sub-basement, and while its cause is unknown it is supposed to have been due to spontaneous combustion. Because of the high rates in that section of the city the Harley company carried but little insurance. About a year ago fire destroyed the same wing of this building, entailing a loss of $60,000. Another warehouse of this company, located at Sixth and Daggett streets, was also destroyed by fire on the morning of January 9, with a total loss of both building and contents and with little or no insurance on the stored goods.

* * *

The Federal Rubber Manufacturing Co., of Milwaukee, has announced the closing of a contract for a new Pacific coast branch building on the southwest corner of Van Ness avenue and Sutter street, this city, the building to be completed by February 1. This branch will be the distributing point for Federal tires for the Pacific Coast and Hawaii.

* * *

The western representation for the Portage Rubber Co., of Akron, Ohio, has been secured by C. C. Eichelberger, a veteran of the tire industry on the coast, whose sales department will be established in Golden Gate avenue at Hyde street. Mr. Eichelberger is one of the best known members of the local tire fraternity.

* * *

Los Angeles is said to be the center of the largest motoring community on the Pacific Coast, and it is probable that more makes of tires are handled there than in any other far-west city, with a demand ever on the increase. Among the latest makes to secure representation in that city is the Tyrian, manufactured by the Tyer Rubber Co., of Andover, Massachusetts, which is to be distributed through southern California by the B. F. Wade Tire & Rubber Co., of 512 West Eighth street.

* * *

Work is being pushed on the automobile tire factory under erection for the Panama Rubber Co., at Compton, and it is probable that this building will soon be completed and equipment installed. This industry was started in December, 1912, and the stores of the W. D. Newerf Rubber Co. were purchased in June of the following year. Funds for payment of the dividend of 7

per cent., which was recently declared by the Panama company, are stated to have been derived from the earnings of these stores.

* * *

The Los Angeles branch of the United States Tire Co. is adding both to the variety of the merchandise it offers and to the number of its employes. In addition to tires, a full line of rubber goods, including coats, boots, and everything that is made of rubber, will hereafter be carried in stock at this branch, and a larger force is required to handle the increased trade.

* * *

While excavations were being made in the high school grounds at Auburn, recently, what appears to be a vein of very fine asbestos was uncovered. Tho the vein is small, being only about 4 inches wide, the fibre is said to be of high grade.

* * *

The Hendrie Rubber Co., of Torrance, is reported to be meeting with much success. It has recently established branches in several cities, with a main distributing station at San Francisco. The capacity of the plant is now in the neighborhood of 100 tires a day and it is the expectation of the company to market its entire output in California. It is strictly a home product, even the cotton used in the fabric being grown in the Imperial Valley and woven by California cotton mills.

* * *

The branch store of the Kelly-Springfield Tire Co., at 515 East Pike street, Seattle, Washington, is one of the largest and most up-to-date of its kind in the northwest, the workroom containing 2,000 square feet of floor space, which is sufficient to accommodate five trucks, and is necessitated by the growth of the truck tire department at this branch and for the special application of the company's block truck tires.

* * *

During the past month there has been rain in plenty and already the total for the season has far exceeded the entire rainfall of last winter. It would seem that business should have picked up wonderfully under these conditions, and so it has for the retailers, because storm clothing has been in great demand and they have been able to work off accumulated and surplus stocks. The jobbers have not benefited to a corresponding extent, but of course it is a matter of satisfaction for them to know that this clearing out of old stocks should have a desirable effect on next season's trade.

* * *

The California branch of the Pennsylvania Rubber Co., of which J. E. French is manager, has moved its wholesale quarters and general store and salesrooms to a new location on Second street, between Mission and Howard, where larger quarters and better light afford a great improvement over the former cramped quarters on Mission street, near First. A retail department for attention to the needs of the automobile trade has been opened at Van Ness avenue.

* * *

The rubber heel which the American Rubber Manufacturing Co. is now turning out for Wm. Perkins, a well-known rubber man of this city, is meeting with excellent success. Claims that this heel is an infringement of prior patents have not been supported, and the fact that Mr. Perkins has received some very good offers for his rights indicates the genuine merit of the article.

* * *

The Sacramento Rubber Co., Sacramento, California, has taken the agency in that territory for the Federal Rubber Manufacturing Co., of Milwaukee, and has added a special service department.

* * *

The new wide-tire law enacted in the state of Washington, and which went into effect January 1, provides that for tires 2 inches wide or less the maximum load shall not exceed 400 pounds an inch of tire width. This would make the maximum on a wagon with 2-inch tires 3,200 pounds, or with 1-inch tires 1,600 pounds. For tires wider than 2 inches and up to 5 inches the maximum load is not to exceed 400 pounds an inch of width of tire plus 50 pounds an inch in excess of 2 inches of width of tire. With a 5-inch tire the ratio of weight per inch of tire width is increased to 500 pounds an inch plus 70 pounds an inch for tires in excess of 5 inches wide. The maximum load includes the weight of the vehicle, and the law also provides that the load must be evenly distributed on each axle. The enforcement of this law is expected to materially aid in reducing the cost of upkeep of roads, statistics from European countries—which have taken the lead in wide-tire legislation—being unqualifiedly in favor of the wide tire from every standpoint.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

ALL the industries of this city are in a prosperous condition, with mills and factories running full force and in not a few instances day and night. Trenton's importance as a manufacturing center and its prospects for rapid and immediate growth and development are shown in reports recently made to the State Department of Labor. The year 1913, which was one of great prosperity, showed a production much in excess of the 1912 output. The rubber mills especially are doing a big business, those in the automobile accessory lines being particularly active.

* * *

The Essex Rubber Co. plant is being operated 24 hours a day, with a force of 400 operatives. This company is now installing new and heavier machinery in various departments and is adding a new press room 60 x 200 feet in size, engine and boiler rooms, and a new warehouse. These improvements and additions are expected to make room for an increased working force.

* * *

The John E. Thropp's Sons Co., which manufactures tire molds, wrapping, unwrapping and tire-making machines, vulcanizers, jar ring lathes, etc., is another of the local concerns for whose products the demand is in excess of productive capacity.

* * *

The Ajax-Grieb Rubber Co., well known tire manufacturers, sent out on January 1 from its New York office, at 1796 Broadway, an interesting circular in which much optimism is expressed. This circular goes on to describe confidence—of which optimism is the soul—as "the product of knowledge"; and the fact that the company is willing to back its confidence in the product of its large factory at Trenton, to the extent of a definite written guarantee of 5,000 miles on the Ajax non-skid tire, indicates a knowledge of its exceptional value and a very good reason for the present operation of that factory twenty-four hours of every week day.

* * *

The fire that recently occurred in the shipping department of the Empire Rubber & Tire Co. did not seriously interfere with this company's business, and orders are being filled and shipments made with the usual promptness. The origin of the fire is unknown, and the damage amounted to about $1,500.

* * *

A meeting of creditors of the Russell Manufacturing Co., of New Brunswick, New Jersey, was held in that city a short time ago and a final dividend of 30 per cent. declared. A dividend of 50 per cent. having previously been paid, the creditors have realized 80 per cent. of their claims against this concern.

* * *

Charles Wilcox, for the past 28 years a resident of Morrisville, New Jersey, and employed by the Joseph Stokes Rubber Co., of Trenton, died on January 9, following a stroke of paralysis a few days earlier. He was 55 years of age and is survived by his wife, three daughters and three sons.

FOREIGN TRADE OPPORTUNITIES.

A REPORT from an American consul states that a business firm in his district desires to enter into correspondence with manufacturers of rubber overshoes with a view to securing an agency. As overshoes coming from Boston have a certain trade, it is preferred that manufacturers from that city or vicinity who use this word in letterheads or goods answer. Correspondence must be in Spanish, prices in gold pesetas c. i. f. some Spanish port should be quoted, and weights and measures of goods ready for export should be metric. Report No. 12,277.

A European business firm informs an American consular officer that it wishes to secure the agency of American manufacturers of a single-tube bicycle tire. The firm is prepared to give references. Report No. 12,290.

An American wholesale dealer in technical wares in a European city wishes to be placed in communication with American firms manufacturing cotton for electrical insulating purposes. The cotton must be spun on warp cops and must unwind easily. The dealer intends making considerable purchases, and desires offers at once. The consular officer who forwarded this information states that good references can be furnished. Report No. 12,301.

An inquiry has been received by an American consul in Germany from a local business man who is desirous of securing the names of American manufacturers of all kinds of rubber goods. He would like eventually to represent such firms in Germany, and states that he will be glad to furnish satisfactory references. Correspondence is solicited, and may be in either English or German. Report No. 12,302.

A business man in Australia has requested an American consul to supply him with the names of the leading American manufacturers of tennis racquets (frames only), gut for stringing the same, and tennis balls used in the international tennis matches. Report No. 12,354.

A report from an American consular officer contains a copy of a letter from a business firm in his district asking to be put in touch with American manufacturers of vulcan fiber. The company states that it purchases large quantities of this material, but most of the purchases at present are made through European middlemen, and the firm is anxious to make direct connections for its supplies. It is stated that over 220,000 pounds of this material are imported annually. Copy of the complete report giving further details will be sent to interested firms, as well as a sample which was furnished by the concern in question. Report No. 12,394.

An American consular officer in Canada reports that a resident of his district intends in a short time to establish a factory for the manufacture of rubber gaiters, and he desires to get in touch with American dealers in materials suitable for this purpose. Report No. 12,400.

A report from an American consular office states that a dealer in electric appliances in England desires to be brought into touch with American manufacturers of India rubber hose, armored with spiral steel wire, covered in turn with a cotton webbing. the hose to be such as is used in connection with vacuum cleaners. Report No. 12,417.

Sealed proposals for furnishing and delivering about 69,400 pounds of manila rope and 1,000 feet of rubber hose will be received at the United States Engineer Office, Custom House, Memphis, Tenn., until February 16. Information on application to E. M. Markham, Major, Engineers. Report No. 1,628.

In the United States alone there are manufactured annually about 10,000,000 automobile tires and about 2,000,000 motorcycle and bicycle tires. According to these figures, each automobile in this country—there are nearly 1,200,000 cars—uses two sets of tires each year.

THE INDIA RUBBER WORLD TROPHY AT THE LONDON RUBBER SHOW.

THE management of the Fourth International Rubber and Allied Industries Exhibition—to be held in London from June 24 to July 9 next—has distributed a 24-page pamphlet descriptive of the competitions to be held in connection with that exhibition and the various prizes and trophies to be awarded to the successful competitors. It devotes an entire page to the $1,000 silver cup offered by THE INDIA RUBBER WORLD for "The Best Process for Extracting Latex from wild *Hevea*, *Castilloa* or *Manihot*." The description of the cup and the conditions under which it will be awarded, as they appear in this pamphlet, are as follows:

"This Trophy of silver is a Cup fifty inches in height, and is of most artistic design and workmanship. The stem of the Cup represents a trunk of the Rubber Tree, beside which is depicted a man with a rubber-tapping knife in one hand and a calabash in the other, tapping the tree in the destructive manner common to wild-rubber gatherers. The upper part of the tree trunk terminates in a cluster of rubber leaves, which hold a vase, graceful in form, the center panel bearing the inscription:

"THE INDIA RUBBER WORLD Trophy, for the Best System of Extracting Latex from the *Hevea*, *Castilloa* or *Manihot*. International Rubber Exhibition, London, 1914."

THE INDIA RUBBER WORLD CUP.

"This Cup is offered for the best process for extracting the latex from either the *Hevea*, *Castilloa* or *Manihot* wild rubber trees. (Note: NOT PLANTATION OR CULTIVATED trees.) The word 'best' is not meant to imply a process that is the best for only one of the three, but one that is relatively of the greatest value to the rubber-producing industry in countries where the above-named trees grow in their wild, not cultivated, state.

"Entries for this Competition may be in the form of an essay, with or without diagrams or illustrations, or they may be accompanied by tools and appliances for the purpose of further demonstrating the advantages of the suggestions made. All Essays must be legibly written or typed on one side of the paper (foolscap size preferred).

"Entries must be addressed to the Awards Committee, Exhibition Offices, 75, Chancery Lane (Holborn), London, W. C., whom they must reach not later than the 1st May, 1914. Competitors have the privilege, if they wish, of explaining or demonstrating their process before the Judges.

"The winning and the second and third best Essays will be read at the International Rubber Conference, and they will be duly published in THE INDIA RUBBER WORLD, New York, and in the official records of the Exhibition. The Exhibition Committee will present engraved Certificates to the first, second and third successful competitors.

"It is to be understood that entries are only accepted on the understanding that the Judges' decision will be final and without appeal. The Cup will be the absolute property of the winner. There will be no entrance fee. Entries close 1st May, 1914."

THE RUBBER CLUB GATHERING STATISTICS.

ANYONE who has been interested in the statistics of the rubber industry of the United States and has sought to get accurate information as to the output and value of different rubber articles has learned how difficult it is to get this information in exact and detailed classified form. The Rubber Club of America, following its policy of being useful commercially as well as agreeable socially, has started on the quest of correct rubber statistics, and with this in view has recently sent out the two circulars reproduced below; one asking the manufacturer for information as to the number of people connected with his business, and its volume and value, and the other supplying him with a form to be used in furnishing this information.

CIRCULAR SENT TO RUBBER MANUFACTURERS.

RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE,
NEW YORK.

January 23, 1914.

To the Rubber Manufacturers of the United States:

The manufacture of india-rubber goods in recent years has reached such large proportions as to be classed among the most prominent industries of the United States, but up to the present time no reliable statistics have been compiled from which authentic information can be obtained showing its relative importance. The figures published by the Census Bureau at long intervals are frequently incomplete. The Rubber Club of America, which is a national organization comprizing in its membership representatives of all branches of the industry, proposes to make the effort to secure these statistics (taking for this purpose the business of the year 1912); and this plan has received the approval of the executive committee of the club.

With this end in view, we enclose herewith a blank, which we would be pleased to have you fill out at your convenience and return. Please note that this blank bears a number, so that YOUR NAME WILL NOT APPEAR ON YOUR REPORT. This is done for the purpose of making the information furnished absolutely confidential, as it will pass only into the hands of the secretary of the club, who is not connected with the rubber industry in any other capacity. The numbers are to be identified by names on a separate index, and after the information has been collected and tabulated the original reports will be destroyed.

It is hoped that this method will obviate any possible hesitancy on the part of manufacturers in furnishing the desired information.

Upon request we will be pleased to furnish you with a copy of these statistics when compiled.

We trust you will co-operate with the club in this important undertaking. Yours very truly,

RUBBER CLUB OF AMERICA,
H. S. VORHIS, Secretary.

FORM ON WHICH INFORMATION IS TO BE RETURNED.

No.....

Information Requested for Statistical Report of the Rubber Industry of the United States.

To Be Compiled by the
RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE,
NEW YORK.

For the Year Ending December 31, 1912.

It Is Guaranteed That All Information Given Will Be Held Strictly Confidential.

GENERAL

Number of employes engaged in manufacture for year ending December 31, 1912..... .....
Number of employes in office, administration, selling, etc., for year ending December 31, 1912..... .....

PRODUCT

Give answers in value of product manufactured in each of the following general divisions at factory sales prices:

Mechanical Goods	$.....
Tires	$.....
Boots and Shoes	$.....
Insulated Wire and Insulating Compounds	$.....
Druggists' and Stationers' Sundries	$.....
Waterproof Fabrics (Carriage Cloth, Hospital Sheetings, etc.)	$.....
Clothing (Single and Double Texture)	$.....
Hard Rubber Goods	$.....
Reclaimed Rubber	$.....
Miscellaneous (not included in any of the above schedules)	$.....
Total Production	$.....

Please fill out this blank and return without signature to
H. S. VORHIS, Secretary, RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE, NEW YORK.

DEPARTMENT OF COMMERCE PLANS FOR DEVELOPMENT OF FOREIGN TRADE.

The Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, has opened an office in the Custom House, New York, where publications of the bureau will be on file and an experienced member of the staff will be in charge to give information concerning the work of the bureau and to assist merchants and manufacturers in the development of foreign trade. Consuls in this country on leave of absence will visit this new office as convenience permits, meeting representatives of houses desiring to cultivate business in their particular foreign fields, and advance notices of these visits will be given through the daily Consular and Trade Reports, through notices to business houses which may have filed their names with the bureau as interested in special foreign fields, and through advices sent to local trade organizations. Another feature of the work of the bureau is that its commercial agents on their return to the United States will attend trade conferences or conventions of persons or organizations interested in special lines, for the purpose of personally informing merchants and manufacturers of the result of their studies on such lines in the foreign field.

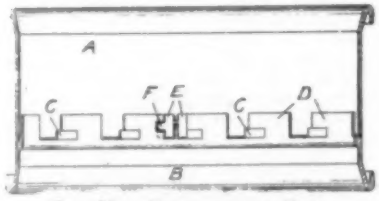
THE FEDERAL WATERPROOFING CO.

The Federal Waterproofing Co., formerly of Akron, and now located at Asbury Park, New Jersey, is producing an attractive line of ponchas, capes and surface clothing, especially adapted for army use. This company also makes hygienic sheets and hospital sheeting, and is said to have in contemplation a more elaborate line of waterproof garments. William Keyes, for many years prominently indentified with waterproof clothing interests, is now connected with this company.

A Few of the Latest Tires.

A NEW DEMOUNTABLE TIRE RIM.

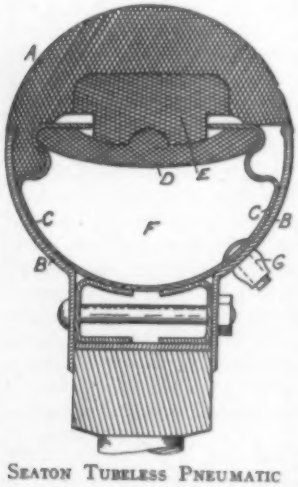
THE drawing herewith shows a new demountable rim upon which a patent has been granted to Joseph M. Gilbert, and one-half assigned to the B. F. Goodrich Co., one-fourth to the Goodyear Tire & Rubber Co. and one-fourth to the United States Tire Co. This rim is so constructed as to make it impossible to assemble the parts and place the tire on the rim unless the latter is properly locked. The rim comprises two sections *A* and *B* which are provided with interlocking lugs. Section *A* has a series of lugs *C* which fit into recesses in the lugs *D* of section *B*, these lugs being so spaced around the rim that when the two parts are placed together and moved in opposite directions, the lugs will engage as shown. In order to prevent the two parts of the rim from moving relatively to each other, a lock *E* is arranged to fit between one pair of lugs. This lock is hinged at *F* so that it cannot become detached and mislaid. If the attempt is made to place the rim on the wheel with the lock out of engagement, it will strike against the felloe of the wheel. It is thus absolutely necessary to secure the lock before the auxiliary rim can be placed on the wheel, making it impossible to accidentally leave the rim sections unlocked.



THE NEW DEMOUNTABLE RIM.

ANOTHER PUNCTURE-PROOF PNEUMATIC.

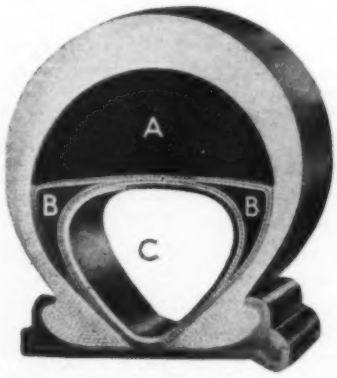
Among the many types of automobile tires which have recently been patented is one of entirely new design. It is of the pneumatic type but has no inner tube. This tire is designed with the intention of eliminating blow-outs and rim-cutting and to provide a construction by means of which a puncture will be automatically sealed. Referring to the drawing, the tire consists of a rubber tread *A*, the beads of which are clamped between the metal rim *B* and an inner metal band *C*. A curved band or bridge of rubber *D* is placed inside the inner rim, and between this bridge and the outer tread is a rubber filler *E*. The space *F* is filled with compressed air, through the valve *G*, and the pressure exerted by this air tends to force the band *D* outward, thus clamping the beads of the tread tightly between the two metal rims, and forming an air-tight construction. With such a tire it is easily seen that a puncture would be very rare, but in case any sharp object pierced the tread and band *D*, the puncture would be automatically closed, since this band is always under high compression, due to the action of the air in forcing it outward. [U. S. Patent No. 1,077,310. B. C. Seaton, Detroit, Michigan.]



SEATON TUBELESS PNEUMATIC TIRE.

NEW PUNCTURE PROOF PNEUMATIC TIRE.

Differing radically from the usual type of pneumatic, a new form of tire known as the Duplex has recently been placed upon the market. This tire is an adaptation of the two oldest principles applied to the inner construction of pneumatic tubes. A study of the cross sectional view tells the complete story. First, under the tread of the tire comes the semi-circular section *A*. This section is a special rubber composition which is claimed not to be affected by heat, cold, or moisture. Between the filler and the rim is a protector *B* which encloses the air tube *C*. The protector is constructed of rubber and fabric, while the tube is of the usual construction but of smaller size. The Duplex inner tire can be installed in any casing and on any style of rim. It will be seen that while the tire is really pneumatic, it is at the same time puncture-proof, since the air tube is at a safe distance from the tread. [The Duplex Inner Tire Co., 3147 Locust street, St. Louis, Missouri.]



DUPLEX INNER TUBE.

THE NEW GOODYEAR DETACHABLE TREAD TIRE.

The Goodyear Tire & Rubber Co. of Akron, Ohio, has brought out a new type of pneumatic tire which possesses features of interest. The new tire consists of the usual tire carcass and a detachable rubber tread. When the tire is deflated the tread is easily removed, but when under the proper air pressure the two parts possess the strength of a one-piece tire. This makes it possible to replace either the inside or the outside portion in a few minutes, either on the road or in the garage, whereby practically a new tire is obtained at about half the usual price. A special construction that gives the edges of the detachable tread an unstretchable bead, provides the necessary grip to hold it in place and to protect the inside from dirt and water. The tread portion does not bear any of the inner tube strain and no mechanical fastenings of any kind are necessary. The tread may be made with either a smooth surface or with anti-skid projections.

TO KEEP RIMS FROM RUSTING.

An employe of a large tire company noticed that many thousand tires were returned each year damaged by rim rust. He cogitated on the subject and finally invented what he calls an "anti-rust rubber coating," which he believes will absolutely prevent the rusting of the rim. It is made of rubber and graphite and a solvent. It dries in a few minutes and is impervious to water. The manufacturers believe that it should reach a sale of a million dollars a year, based on these calculations, viz.: that there are a million motor cars and trucks in operation in this country and that each one of these should use at least a can a year, at a dollar a can. Probably the manufacturers would be satisfied even if there proved to be a little shrinkage from these figures. [The Anti-Rust Co., Akron, Ohio.]

The Obituary Record.

GEORGE A. LEWIS.

GEORGE ALBERT LEWIS, president of the Beacon Falls Rubber Shoe Co., died at his home in Naugatuck, Connecticut, January 27, after an illness of several months. Mr. Lewis was born in Sharon, Connecticut, February 11, 1843. After attending school in Middletown and New Haven,

GEORGE A. LEWIS.

he entered, at an early age, the employ of the M. & C. T. Camp Co., of Winsted. During the Civil War he was a clerk in the commissary department of the army. In 1864 he became associated with the Goodyear Metallic Rubber Shoe Co., of Naugatuck (of which his father, Samuel J. Lewis, had been the first president) as a bookkeeper. His industry and ability gave him rapid advancement in this company, until he became its secretary and then its treasurer and general manager. He occupied this position when the company was merged with the United States Rubber Co., in 1892, and he was made a member of the first board of directors and of the first executive committee of the larger corporation; the other members of that executive committee being R. D. Evans, Samuel P. Colt, James B. Ford, Charles R. Flint, Henry L. Hotchkiss and Charles L. Johnson.

In 1898 Mr. Lewis left the United States Rubber Co. and soon after organized the Beacon Falls Rubber Shoe Co., of which he was made president—a position which he retained to the time of his death. The success of the Beacon Falls company was attributable largely to Mr. Lewis's executive ability, industry and popularity in the trade. In addition to his rubber interests he was for many years president of the Naugatuck National Bank. He was a man of unusual energy and was extremely active in his varied interests until about six months ago, when he had a slight stroke of paralysis. This was followed by a second stroke, from which, however, he seemed to recover; but a third stroke, occurring about six weeks ago, confined him to his house and from that time he grew gradually weaker until the end.

Mr. Lewis was a man of delightful personality, affable and agreeable to all alike, irrespective of social status. He was a man of spotless integrity and open and above board in all his dealings. He was highly esteemed all through the rubber trade, but especially in the Naugatuck Valley, where for many years he was one of the leading citizens, conspicuously successful in business, active in civic affairs and interested in the general welfare.

He is survived by his wife and two sons—Tracy S. Lewis, treasurer of the Beacon Falls Rubber Shoe Co., and a younger son still in school.

ASA W. DAY.

Asa Wilton Day, president of the Day Rubber Co., St. Louis, Missouri, and former member of the Connecticut Legislature, died on December 28 at his home in St. Louis, of apoplexy, in his seventieth year.

Mr. Day was born in Marlborough, Connecticut, and was educated at Yale College. In 1865 he engaged in the cotton business with his brother, John W. Day. Four years later he married Mary R. Colt, of Detroit, Mich. In 1868 he was a member of the Connecticut Legislature. He went to St. Louis in 1882, and with his brother, Samuel J. Day, organized the firm of Day Brothers & Co., dealers in rubber goods. In 1884 he bought his brother's interest in the business and changed the firm name to Day Rubber Co.

LEON M. WOODFORD.

Leon M. Woodford, who was connected for thirty-five years with the Goodyear India Rubber Glove Manufacturing Co., of Naugatuck, Connecticut, died Wednesday, December 30, at his home in that place, after an illness that had continued for nearly a year.

Mr. Woodford was born in Naugatuck August 25, 1852, and educated in the South Berkshire Institute, in New Marlboro, Massachusetts. For a few years he was employed by the Western Union Telegraph Co., in Bridgeport, Connecticut, but over a third of a century ago became associated with the Goodyear company and continued with that company to the time of his death. During the last few years of his life he had charge of the office and was the company paymaster. He was very prominent in masonic circles and was active in the work of St. Michaels Episcopal Church, of Naugatuck.

RUBBER STAMPS IN DRAFTING FOR BLUEPRINTS.

It has been found that the rubber stamp, in addition to its manifold other uses, may be used to advantage in certain portions of drawings for blue prints—as, for instance, titles, general instructions, etc.—and that portions thus stamped will show up in the print as well as if drawn in the regular way. The tracing to be stamped is first sprinkled with powdered pumice stone, thoroughly rubbed in and the surplus blown away. The stamp, freshly inked, is then applied, firmly and evenly, after which lampblack is sprinkled over the stamped portion, pressed with a rag over the finger to soak up the ink, and the surplus blown off. When the tracing is dry the entire surface should be carefully cleaned with gasolene.

EXTENT AND GROWTH OF THE AUTOMOBILE INDUSTRY.

On October 1 last there were registered in the United States 1,254,971 automobiles, of which number 146,365 represented new registrations, 7,153 non-resident and 18,288 re-registrations. New York State is far in the lead in these figures, having a total registration of 129,441, of which 14,420 are new—California being second, with a total registration of 118,135, of which 6,479 are new. In 1908, the first year of really big production of automobiles in this country, there were 55,000 cars made, and since that time the demand and consequent output have steadily increased until with the past year's manufacture of 375,000 cars the result was an over-production of only a few thousand, while it is estimated that the annual absorption power in this country for motor cars in normal times is about 425,000.

THE FAMOUS HOUSE OF FABER.

THE rubber factory of Eberhard Faber, known as the Eberhard Faber Rubber Co., was established in Newark in 1858 by Christopher Roberts. Mr. Roberts, born in Manchester, England, in 1827, where he learned the business of rubber manufacturing, came to Providence, Rhode Island, in 1849, to install some rubber machinery for a relative in business there. He concluded to remain in this country, and established a small factory, removing to Newark in 1858. At that time he entered into an arrangement with Eberhard Faber, father of the present head of the firm, to manufacture rubber bands and rubber erasers, the entire product of the factory to be taken exclusively by Eberhard Faber and marketed in his name. It is a remarkable fact and one worthy of

EBERHARD FABER.

note that the arrangement made at that time, by word of mouth only, was continued without interruption until the death of Mr. Roberts in 1903. During that entire period there was absolute harmony in the business relations of the two companies—a commentary indeed upon the high character of these two men.

From 1858 to 1884 the rubber factory was conducted under the name of Christopher Roberts. In 1884 the style was changed to C. Roberts & Co., a firm in which the present Eberhard Faber was a partner. In 1898 a corporation was formed known as the C. Roberts Rubber Co., of which Mr. Faber was vice-president. In December, 1910, the interests of the Roberts heirs were purchased by Eberhard Faber, and in 1913 the name was changed to the Eberhard Faber Rubber Co.

Eberhard Faber, the head of the house of that name since the death of his father in 1879, has assumed the management of the business. He has taken an active interest in all departments, including not only the rubber factory, but the large Brooklyn factory, where the lead pencils and penholders are manufactured. Tho an enthusiastic golfer and one of the best known whist players in the country, having formerly been president of the American Whist League, he is assiduous in his attention to the extensive business of which he is the head.

Mr. Faber is a prominent clubman, being a member of the Aldine Club, the Fox Hills Club and Richmond County Country Club of Staten Island, the New York Athletic Club, the German Club and the German Liederkranz. His summer residence on the north shore of Staten Island enables him to conveniently indulge in his favorite sport of golf. During the winter months he occupies a spacious residence on West End avenue, New York.

REDUCTION OF RUBBER FOOTWEAR PRICES.

FULFILLING the general expectation that prevailed in the trade, the new price lists of the United States Rubber Co., issued on January 1, show a material price reduction through the entire line. The company issues both gross and net lists. The changes in the gross lists are few and immaterial, but the changes in the net list are general and substantial. Below there is shown in tabulated form the prices of a year ago of twelve different staple varieties of rubber boots and shoes, the new prices of this year, the amount of the reduction and the percentage of reduction. This list includes boots, lumbermen's shoes, arctics, gaiters and light shoes for both men and women. In the particular goods listed the reduction exceeds 10 per cent. in every instance except one, viz., women's croquets in cartons; and in one instance—in men's heavy four-buckle gaiters—the reduction is over 16 per cent. From this table it will be seen that the average reduction is over 11 per cent.

TABLE SHOWING AMOUNT AND PERCENTAGE OF REDUCTION IN FOOTWEAR PRICES ANNOUNCED JANUARY 1, 1914.

	Net Price 1913.	Net Price 1914.	Amount of Reduction.	Percentage of Reduction.
Men's Duck Hip Boots.....	5.14	4.53	0.61	11.87
Men's Gum Storm-King Boots..	3.78	3.33	0.45	11.90
Men's Duck Short Boots.....	3.67	3.24	0.43	11.71
Men's Gum Short Boots	3.18	2.75	0.43	13.52
Men's One-Buckle Duck Perfections	1.74	1.54	0.20	11.50
Men's One-Buckle Gum Perfections	1.63	1.44	0.19	11.66
Men's Heavy Arctics	1.31	1.15	0.16	12.21
Men's Heavy Four-Buckle Gaiters	2.22	1.85	0.37	16.66
Men's Plain Sandals in cartons.	0.78	0.69	0.09	11.54
Women's Four-Buckle Gaiters in cartons	2.06	1.82	0.24	11.65
Women's Croquets in cartons...	0.54	0.49	0.05	9.26
Women's Storm Slippers in cartons	0.59	0.53	0.06	10.17

Both the trade and the consuming public ought to be very well satisfied with these lower prices. To be sure, crude rubber in January, 1913, ranged from 102 to 109, while in the January just past Upriver Fine ranged from 73 to 77—being a decrease of about 30 per cent. from the prices of a year ago. But crude rubber is not the only ingredient of rubber footwear (tho it is an exceedingly important one, notwithstanding the gibes of the humorist and the complaints of the chronically grouchy to the contrary) and the other items of cost have in some cases shown an increase—as, for instance, the general cost of labor. So that, taking the situation as a whole, the manufacturers seem to have lowered their prices as much as is consistent with conservative business policy. The other manufacturers will undoubtedly follow the schedule of prices announced by the United States Rubber Co.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

News of the American Rubber Trade.

PORTAGE CO. INCREASES CAPITAL STOCK.

AT the annual meeting of stockholders of the Portage Rubber Co., of Akron, held January 19, the capital stock of that company was increased from $1,000,000 to $1,250,000, the new issue being for the purpose of adding to the working capital and to take care of the additions and improvements now being made in the plant. Only about $100,000 of this issue is at present time to be offered at par to stockholders. The officers elected for the ensuing year are: James Christy, president; J. W. Miller, vice-president; A. S. Mottinger, secretary; W. W. Wildman, treasurer. These four are also members of the board of directors, the number of whom has been reduced to ten—the other six being: M. S. Long, John Kerch, J. D. Raw, Judge D. A. Doyle—all of Akron—Dr. O. S. Welty (Canal Dover) and Fred H. Snyder (Massillon).

HARTFORD RUBBER WORKS CO. INCREASES CAPITALIZATION.

The Hartford Rubber Works Co., of Hartford, Connecticut, a subsidiary of the United States Rubber Co., on December 27 filed with the secretary of state a certificate of increase of capital stock from $1,000,000 to $2,000,000. This new stock is a 6 per cent. preferred issue, divided into 10,000 shares of $100 each, which it is stated have been entirely disposed of to holders of the common stock. The activity of this company's tire business is said to necessitate the operation of the present plant at full capacity, and should the anticipated further growth be realized added facilities will before long be required. It is to take care of these demands that the additional stock has been issued.

RUBBER COMPANY DIVIDENDS.

The Firestone Tire & Rubber Co. paid on January 15 a regular quarterly dividend of 1¾ per cent. on its preferred stock and 2½ per cent. on its common stock.

The Goodyear Tire & Rubber Co. paid on January 1 the usual quarterly dividend of 1¾ per cent. on its preferred stock.

The Lee Tire & Rubber Co. paid on January 10 its usual quarterly dividend of 1¾ per cent. on stock of record January 1.

The Manufactured Rubber Co. paid on December 31 its usual quarterly dividend of 1½ per cent. on preferred stock of record on December 24.

The United States Rubber Co. has declared a regular quarterly dividend of 1½ per cent. on common, 2 per cent. on first preferred, and 1½ per cent. on second preferred stock—payable January 31 to stock of record on January 15.

The Fisk Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on its first preferred stock—payable February 1 to stock of record on January 21.

The Hood Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock—payable February 2 to stock of record on January 31.

BOSTON WOVEN HOSE & RUBBER CO. INCREASE RECEIVING AND SHIPPING FACILITIES.

The growth of the Boston Woven Hose & Rubber Co.'s plant at Cambridge, Massachusetts, has made it necessary to provide for better facilities for freight handling. Fifteen thousand feet of land have been leased from the Boston & Albany Railroad, and side tracks installed so that twenty-two cars can be loaded and unloaded practically at the same time.

This also provides for receiving coal when necessary by rail, altho the larger part will be handled as at present from lighters coming through the Charles River Basin direct to the company's coal bunkers.

PFALTZ & BAUER INCORPORATE.

Pfaltz & Bauer, well known dealers in chemicals for the rubber and other industries, who have been in business for the past fourteen years and whose offices are located at 300 Pearl street, New York, have recently incorporated and will hereafter be known as Pfaltz & Bauer, Inc. The officers of the corporation are: Henry Pfaltz, president; Frank M. Bauer, vice-president and treasurer, and T. E. Price, secretary.

GOODYEAR TIRE & RUBBER CO. PLANS INCREASE OF CAPITALIZATION.

Word reached this office on January 28 that the Goodyear Tire & Rubber Co., of Akron, plans to raise nearly $5,000,000 of new working capital, to be divided between preferred and common stock, and to be distributed as follows: A stock dividend of 20 per cent. to go to present common shareholders, who are also entitled to subscribe at par for their pro rata share of the new common stock to the extent of 30 per cent. of their present holdings. Holders of the preferred will be permitted to buy two shares of new preferred at par for each five shares now held and to buy one share of new common at par with every four shares of new preferred bought. Stockholders will vote on March 12 on an increase in the preferred captal from $5,000,000 to $7,000,000 and in the common from $5,033,800 to $8,000,000.

FORMAL OPENING OF REPUBLIC CLUB HOUSE.

The formal opening of the Republic Rubber Co. employes' club house, at Youngstown, Ohio, on January 15, was attended by a large number of persons, many of whom had received invitations sent out early in the month by the governing board.

THE REPUBLIC CLUB HOUSE.

Mention of this club was made in our July number, when a picture of the club house was shown; and the election of its board of governors was noted in our November issue. The accompanying cut shows another view of the building, which is located on the east side of Albert street, directly across from the general offices of the company. It is of brick, stone and steel construction, has lecture and reading rooms, rooms for indoor amusements of all kinds and grounds for outdoor sports as well, all employes of the company having the privileges of the main floors, while sustaining members—who are charged a yearly fee of $1—have the privileges of the entire building. It contains also a restaurant, with a seating capacity of 1,200, where food is served at cost. This club house has aroused considerable interest and is expected to be of permanent advantage and benefit.

Consul General Julius G. Lay, of Rio de Janeiro, is in the United States on leave of absence, and will be at the New York office of the Bureau of Foreign and Domestic Commerce (315 Customhouse), on February 9 and 10, to confer with manufacturers and exporters who are interested in Brazilian trade.

NEW INCORPORATIONS.

British Rubberized Fabric Co., Inc., January 23, 1914; under the laws of New York; authorized capital, $25,000. Incorporators: Joseph N. Rousseau, 11 West Twenty-fifth street; William Schor, 15-17 East Sixteenth street, and Joseph Beiliss, 96 St. Mark's Place—all of New York. Location of principal office, Brooklyn, New York. To manufacture and deal in rubberized cloth, etc.

Buffalo Mill Supply Co., Inc., December 31, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: Willard G. McConnell, George F. Reach and John C. Van Vleet—all of Buffalo, New York. To deal in rubber goods, mill supplies, machinery, etc.

De Vere and Strang, Inc., December 27, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Florence M. De Vere and Eugene L. De Vere, 263 Flatbush avenue, Brooklyn, New York; Kathryne P. Strang and Fred M. Strang—both of Ocean Side, New York. To manufacture and deal in machine supplies, rubber, tires, etc.

Double Tread Tire Co., Inc., January 14, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: James Martin and Gertrude Martin, 145 East Fifty-third street, and Joseph Schwartz, 501 East Eighty-sixth street—all of New York. To deal in tires, etc.

The Elasto Co., Inc., January 16, 1914; under the laws of New York; authorized capital, $30,000. Incorporators: John G. Ellendt, East Rochester, New York; Albert T. Bradley, Rochester, New York, and Henry G. Kennedy, Penfield, New York. To manufacture tire filler.

Empire Rubber & Tire Co., January 2, 1914; under the laws of New Jersey; authorized capital, $1,000,000. Incorporators: Charles H. Baker, C. Edward Murray and J. Cornell Murray—all of Trenton, New Jersey. To manufacture rubber goods.

Giant Tire & Rubber Co., December 15, 1913; under the laws of Nebraska; authorized capital, $20,000. To engage in the wholesale and retail business of motor vehicle tires and tubes.

Helix Tube Co., Inc., January 14, 1914; under the laws of New York; authorized capital, $250,000. Incorporators: Geo. C. Howard and Clarence S. Houghton, both of 111 Broadway, and James D. Gabler, 311 West Forty-third street, New York. To manufacture auto tires, tubes, etc.

The McGraw Tire & Rubber Co. of New York, Inc., December 30, 1913; under the laws of New York; authorized capital, $1,000. Incorporators: Russell F. Hobron, 1664 Broadway; William L. Levy and Maxwell Davidson, of 170 Broadway—all of New York.

Mechanical Auto Tube Co., December 10, 1913; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Benjamin F. C. Rothwell, 93 Frelinghuysen avenue; William B. Estes, 103 Emmet street, and Frank Forrest Estes, 103 Emmet street—all of Newark, New Jersey. Location of principal office, 145 Frelinghuysen avenue, Newark, New Jersey. To manufacture, buy, sell, import, export and generally deal in inner tubes and tires for automobiles, etc.

The Milton Tire & Rubber Co., January 8, 1914; under the laws of Massachusetts; authorized capital, $40,000. Incorporators: Philip L. Hardy, 43 Maple avenue, Andover, Massachusetts; Herbert E. Pender, 109 Sedgwick street, Boston, Massachusetts, and Charles M. Riddock, 63 Elm street, Andover, Massachusetts. To manufacture, buy and sell tires, inner tubes, rubber goods, etc.

Oriental Rubber & Supply Co., Inc., December 15, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Homer G. Martin, 228 Eightieth street; C. Roy Gedney, 594 Sixth street, and Richard F. Lucey, 340 Clifton Place—all of Brooklyn, New York. To manufacture automobile supplies, etc.

Peerless Key Co., Inc., January 12, 1914; under the laws of New York; authorized capital, $3,000. Incorporators: Chas. J. Watson, 176 Fulton street, New York; Alexander B. Boyd, 674 Forty-fourth street, New York, and Otto Kretchner, 18 Sterling street, Newark, New Jersey. To manufacture rubber typewriter keys, etc.

Peerless Mill Supply Co., Inc., January 12, 1914; under the laws of New York; authorized capital, $25,000. Incorporators: William H. Hines, Jr., Armor, New York; Walter L. Taylor, Hamburgh, New York, and Geo. J. Twist, Buffalo, New York. To deal in rubber goods, belting, etc.

Pressed Asbestos Products Co., January 8, 1914; under the laws of New Jersey; authorized capital, $75,000. Incorporators: Eurana de Bobula, 17 East Eleventh street, New York; Andrew W. Morton, Matawan Road, Matawan, New Jersey, and Titus de Bobula, 17 East Eleventh street, New York. To manufacture, buy and sell articles of merchandise, etc.

The Santo Rubber Co., December 24, 1913; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: George W. Dillman, B. M. Grawl and M. L. Horty—all of Wilmington, Delaware. To buy, own and sell clothing, implements and tools having rubber as a component part.

The Smith Tire Valve Co., December 31, 1913; under the laws of Massachusetts; authorized capital, $10,000. Incorporators; James H. Smith, 10 Waumbeck street, Roxbury, Massachusetts; Reginald L. Robbins and E. Dwight Fullerton—both of 19 Congress street, Boston, Massachusetts. To manufacture, buy and sell valves.

Tire Co. of America, December 31, 1913; under the laws of Illinois; authorized capital, $5,000. Incorporators: Milton Reinsberg, Marcus J. Golden and Essie Johnston. To manufacture, buy, job, sell and repair rubber tires, etc.

True-Fit Waterproof Co., Inc., January 17, 1914; under the laws of New York; authorized capital, $100,000. Incorporators: Etta Harris, 540 West One Hundred and Forty-third street; Henry B. Singer, 411 West End avenue, and Abraham Rubenstein, 790 Riverside Drive—all of New York. To manufacture cravenette goods, etc.

The Ten Broeck Tyre Sales Co., December 12, 1913; under the laws of Ohio; authorized capital, $5,000. Incorporators: Herbert C. Upson, J. H. Bromwell, R. T. Durrett, H. L. Lewman and John E. Bruce. To deal in Ten Broeck auto tires.

The Easton Manufacturing Co., November 24, 1913; under the laws of Pennsylvania; authorized capital, $5,000. Incorporators: William F. Sanders, Brantford, Ontario, Canada; L. H. Seiple, William J. Seiple, John C. Raisley, Asher Seip—all of Easton, Pennsylvania. To manufacture and sell chemicals and chemical compounds.

HARMER RUBBER RECLAIMING WORKS.

The Harmer Rubber Reclaiming Works, East Millstone, New Jersey, which suffered a disastrous fire loss some 18 months ago, have rebuilt and greatly enlarged their plant, and are now working day and night shifts. Harmer shoddy is said to be uniform and clean, and is in active request. The mill is eligibly located from a shipping standpoint, having both rail and water facilities, and is protected by an elaborate fire-fighting equipment. Mr. A. Marcus, connected with the company since its inception, is the general manager.

RESIGNED FROM THE ANCHOR PACKING CO.

J. D. Maguire, president of the Maguire Rubber Co., and H. N. Green, of the Manhattan Rubber Manufacturing Co., have resigned from all official connection with the Anchor Packing Co. Mr. Maguire was president and one of the directors. Mr. Green was treasurer and also a director.

TRADE NEWS NOTES.

The New York Commercial Co. paid another dividend of 5 per cent. on January 20. This makes a total of 30 per cent. that has been paid to its creditors since the company went into liquidation last April. Acording to the trustees, another dividend may be looked for before the affairs of the importing house are finally closed.

A voluntary petition in bankruptcy has been filed by the Springfield Tire & Rubber Co. of Springfield, Ohio, claiming liabilities amounting to $15,223.02 against assets valued at $8,441.94. The Citizens National Bank of Springfield is named as the principal creditor.

Certificates of dissolution have been filed with the Secretary of State by the Empire Tire Co. and the Empire Rubber Co.—both of Trenton, New Jersey—the dissolution of these companies being necessitated by the formation of the Empire Tire & Rubber Co. of that city.

The council of the city of Ithaca, New York, has authorized the purchase of 500 feet of fire hose, while recommendations have been made for similar supplies in other cities, as follows: Altoona, Pennsylvania, 1,000 feet; Austin, Texas, 7,000 feet; Cincinnati, Ohio, 10,000 feet; Holyoke, Massachusetts, 3,000 feet; Jersey City, New Jersey, 12,000 feet; Lima, Ohio, 1,000 feet; Seaford, Delaware, 500 feet; Utica, New York, 2,000 feet; and at Ludlow, Massachusetts, the purchase of hose is being considered.

The Minneapolis headquarters of the Pennsylvania Rubber Co., makers of Vacuum Cup Oil Proof Tires, has been moved to 12 South Eighth street, additional space having been required. This branch, under the management of F. J. Walpole, is the distributing center for the entire Northwest, and its business is said to have doubled every year for the past three years, a rate of increase the same as that enjoyed by the factory. This branch has recently established an office in St. Paul, to handle the business of that city.

A new foundry is being erected at Akron, Ohio, for the Diamond Foundry Co., a concern of which Mr. Emil Krill is the head, and which has been organized with a capital stock of $30,000, for the manufacture of rubber molds and parts for rubber working machinery. The company expects to commence operations some time in February.

The capital stock of the Mecca Tire Co., of Philadelphia, Pennsylvania—a Delaware corporation—has been increased from $100,000 to $500,000.

A company has been incorporated at Wilmington, Delaware, for the establishment of a tire manufacturing industry at Toronto, Ontario. The capital stock of the new concern—The Blowers-Rheubottom Rubber Co.—is $500,000, and the incorporators are: W. R. Blowers, of Toronto; A. Rheubottom, of Pittsburgh, and Geo. D. Hopkins, of Washington.

A review of the value of materials used in the electrical industry of the United States during the year 1913 places the value of rubber-covered wire at $21,000,000, this amount being $3,000,000 in excess of the quantity used in 1912, $6,000,000 greater than the requirements for 1911, and $9,000,000 above those of 1910.

THE MECHANICAL CO.'S WELFARE WORK.

The Mechanical Rubber Co. of Cleveland, Ohio, has a factory welfare organization. A "Welfare Committee," made up of various employes, meets regularly, and through its organization the employes enjoy many benefits. There are classes in English and library privileges for both men and women, classes in sewing and embroidery for the girls, also gymnastics and basketball games. The unthrifty are helped to save in order to enjoy an outing in the summer at some healthful place. The results show clearly how beneficial the work to the general welfare.

THE REPORT OF THE WALPOLE RECEIVERS.

The receivers for the Walpole Tire & Rubber Co. filed their report on January 5 in the United States District Court of Eastern Massachusetts. The report shows that they received claims numbering 461 for a total sum of $1,680,671.84. Of that sum they recommended to the court that payment in full be made on claims aggregating $505,599.16. The receivers recommend that payments to the amount of $114,638.65 be paid out of a total amount of $119,524.52, and suggest that claims of $581,347.49 be adjusted by agreement or by the court, and if by the latter the same be referred to a master to be heard.

They disallow claims aggregating $345,903.64 and suggest that if objection to the disallowance is made by any creditor the claim of the latter be referred to a master for hearing. They recommend until further order of the court claims of $118,586.65, based on notes held by banks, be suspended.

On January 26 word was received from Boston that claims amounting to $500,000 against the Walpole Tire & Rubber Co. had been allowed by the Federal Court. The receivers, Robert O. Harris and Robert C. Fisher, were awarded $6,000 each.

HOSE AWARDS.

Contracts awarded during the month for fire hose to cover the requirements of the various cities include the following: Bi-Lateral Fire Hose Co., 300 feet, Savannah, Georgia; 1,000 feet, La Crosse, Wisconsin. Chicago Fire Hose Co., 1,500 feet, Peru, Indiana. Diamond Rubber Co., 400 feet, Savannah, Georgia. Empire Rubber & Tire Co., 400 feet, Savannah, Georgia. Eureka Fire Hose Co., 1,000 feet, Savannah, Georgia; 1,500 feet, Jacksonville, Florida; 1,000 feet, Davenport, Iowa; 350 feet, Council Bluffs, Iowa. Manhattan Rubber Manufacturing Co., 2,000 feet, South Omaha, Nebraska; 650 feet, Council Bluffs, Iowa. New Jersey Car Spring & Rubber Co., 400 feet, Savannah, Georgia. United & Globe Rubber Manufacturing Cos., 1,000 feet, Flint, Michigan. The Isthmian Canal Commission has awarded to the Goodyear Tire & Rubber Co. contract to supply 100 feet of rubber suction hose.

THE ALLIANCE RUBBER CO.

The Alliance Rubber Co., of Alliance, Ohio, recently commenced the manufacture of a diversified line of rubber merchandise, including molded and mechanical goods and drug sundries, in its new plant, located in the factory section of Alliance. The new factory is 150 feet long and 50 feet wide, and is well equipped with an up-to-date line of motor driven machinery.

An interesting specialty made by this company is a line of electrician's gloves, subjected before shipment to an electrical test ranging from 50 to 100 per cent higher than the voltage for which the gloves are guaranteed. The company was organized and is being operated by Milton Bejact and George C. Russel, local men, and is largely supported by local capital.

RECENT CUSTOMS RULINGS.

Protests by the F. W. Woolworth Co. and L. Mendelson & Co., of New York, against the classification of rubber brooches under "Jewelry"—on which the duty is 60 per cent.—have been sustained by the board, Collector Malone writing that his office erred in returning them under this classification, these articles being properly dutiable under the old law as "manufacturers of hard rubber," at 35 per cent. ad valorem duty.

The Board of United States General Appraisers has sustained the protest of O. G. Hempstead & Son, of Philadelphia, against the classification under paragraph 479 of the tariff act—"waste not specially provided for"—of a consignment of split and defective rubber balls, and has permitted these to enter free of duty, as provided under paragraph 591—"crude India rubber, scrap and refuse, fit only for remanufacture."

LOWER PRICES FOR SPALDING GOLF BALLS.

The new catalog of A. G. Spalding & Bros., issued January 1, shows a reduction in the price of all the $9 per dozen golf balls made by that company to $7.50 per dozen. This reduction is not made owing to the tariff, as of course crude rubber has come in free for many years, but is made because of the decreased cost of crude rubber. The company states that its action in reducing golf ball prices is simply in harmony with its action in other lines where it has reduced prices following a reduction in the cost of raw material.

LEE TIRE & RUBBER CO. IMPROVEMENTS AND ADDITIONS.

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has appreciably increased its equipment and capacity during the past few months, having installed several 60-inch mills, a new calender, three new tire-making machines and several hundred cores and side rings for the manufacture of pneumatic automobile tires, as well as completing a 600 h. p. addition to the boiler house. The cost of these improvements and additions is estimated at between $50,000 and $75,000, and the company anticipates an increase of output for 1914 at least equal to that effected last year, during the last nine months of which tire sales are said to have quadrupled and the production of other departments to have increased more than 50 per cent.

THE BRITISH-AMERICAN MANUFACTURING CO.

The British-American Manufacturing Co., incorporated under the laws of the State of Delaware, November, 1913, was organized for the purpose of treating various fabrics with the Mackintosh process, said to render cloth substances so treated waterproof, rot and mildew-proof, and is guaranteed an absolute water repellent. The company is showing an exceedingly attractive line of samples and has already secured large contracts from the United States and Canadian Governments for ponchos and military overcoats.

The British-American Manufacturing Co. (under the management of which is the American Raimee Co.) is capitalized for $300,000 and its officers are: E. A. Brinckerhoff, president; W. M. Mackintosh, vice-president, and Dr. L. C. Himebaugh, secretary and treasurer. The principal factory of the company is located at Laurel, Maryland. The W. L. Barrell Co., 8 Thomas street, New York, is selling agent.

Morgan & Marshall, East Liverpool, Ohio, are making the Stein-Laplock tire, made for several years by the Stein Double Cushion Tire Co., of Akron, Ohio. The superintendent of the East Liverpool plant is Harvey Miller, well known among the practical rubber men of the country.

INNER TUBES AS LIFE SAVERS.

An incident that recently occurred in Hartford, Connecticut, is well worth a wide publication, because the successful rescue of life made at that place by the use of inner tubes might possibly be repeated in some other place later. On the afternoon of January 8 a number of boys were skating on Park river, near the factory of the Hartford Rubber Works. They were playing "Follow the Leader" and the leader, after the manner of boys, was taking his followers over thin ice. Several of them broke through. The workmen just leaving the factory heard their cries and could see them in the twilight trying to hold on the thin edge of the ice. Somebody bethought him of the possibilities of the inner tubes and the workmen ran into the factory, brought out some inflated tubes, tied ropes to them and threw them to the boys and in this way rescued three of them. A fourth boy, who had gone under the ice, was taken out too late to resuscitate.

As there are at least a couple of million inner tubes around the country, distributed among auto owners, garages and in dealers' stocks, the life-saving possibility of this article is an excellent thing to keep in mind.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE INVENTION AND MANUFACTURE OF RUBBER STAMPS.

Various opinions are expressed as to when and by whom the rubber stamp was invented, altho it seems to be agreed that, while experiments were being made at the same time in other parts of the country, the first rubber stamps were actually produced in Auburn, New York. One authority makes it appear quite clear that James Orton Woodruff of that city was the first to conceive the idea of printing by the use of vulcanized rubber letters, this idea being suggested to him upon seeing a stamp made of cut-out rubber letters glued to a curved block of wood in use for printing on wash tubs; and that, with the aid of his uncle, Urial Woodruff, a dentist, he succeeded in making a vulcanized rubber stamp, using for this purpose a regular dental vulcanizer, and in establishing a business for their manufacture and sale. Later he disposed of this business and embarked in the exploitation of an impervious oil barrel, a patent for which had been granted him in 1865; so that it seems fairly safe to place the date of his stamp invention a little earlier than this, or not later than 1864. The first mounts for stamps of his production were made at Seneca Falls, New York, of black walnut, turned in one piece. One of the earliest stamps made was an American Express Co. C. O. D. stamp, and the first rubber stamp advertisement appeared in the "Northern Christian Advocate," a Methodist weekly.

There seems to be no doubt, however, that the first patent on a process for the manufacture of rubber stamps was that granted April 22, 1873, to Geo. K. Cooke, whose instructions to beginners or apprentices in stamp making, prepared about 35 years ago, were recently published in the London "Commercial Stamp Trade Journal." These instructions are of historic, if not of present practical interest, showing, as they do, the progress that has been made in this particular branch of the rubber manufacturing industry in the past thirty-five years. During this time many new compounding formulae and processes have been employed in the production of this useful article, resulting in great saving of time and expense over the early patented process.

RUBBER STAMPS IN DRAFTING FOR BLUEPRINTS.

It has been found that the rubber stamp, in addition to its manifold other uses, may be used to advantage in certain portions of drawings for blueprints—as, for instance, titles, general instructions, etc.—and that portions thus stamped will show up in the print as well as if drawn in the regular way. The tracing to be stamped is first sprinkled with powdered pumice stone, thoroughly rubbed in and the surplus blown away. The stamp, freshly inked, is then applied, firmly and evenly, after which lampblack is sprinkled over the stamped portion, pressed with a rag over the finger to soak up the ink, and the surplus blown off. When the tracing is dry the entire surface should be carefully cleaned with gasolene.

EXTENT AND GROWTH OF THE AUTOMOBILE INDUSTRY.

On October 1 last there were registered in the United States 1,254,971 automobiles, of which number 146,365 represented new registrations, 7,153 non-resident and 18,288 re-registrations. New York State is far in the lead in these figures, having a total registration of 129,441, of which 14,420 are new—California being second, with a total registration of 118,135, of which 6,479 are new. In 1908, the first year of really big production of automobiles in this country, there were 55,000 cars made, and since that time the demand and consequent output have steadily increased until with the past year's manufacture of 375,000 cars the result was an over-production of only a few thousand, while it is estimated that the annual absorption power in this country for motor cars in normal times is about 425,000.

DURING THE FISCAL YEAR 1913 ENDING NOVEMBER 30 LAST 7,127 motorcycles were registered in the State of Massachusetts.

TRADE NEWS NOTES.

The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, has formally opened its New York branch at 1889 Broadway, where commodious and attractive quarters have been provided for the display and distribution of its product. This branch store has a frontage of 35 feet on Broadway and extends through the block to Columbus avenue. It is under the management of C. C. McCullough.

A company known as the Consumers Tire & Rubber Co., Limited, has been incorporated at St. Catherines, Ontario, with a capital stock of $800,000, to manufacture rubber goods. Among the incorporators are A. W. and W. M. Marquis.

The Werner & Pfleiderer Co., of Saginaw, Michigan, which manufactures rubber mill machinery, is to erect a new factory, plans for which have already been completed, altho construction work is not to commence until early Spring.

A new building is being erected at Kansas City for occupancy by a branch of the Fisk Rubber Co., of Chicopee Falls, Massachusetts. This building, for which it is said a long lease has been signed by the Fisk company, is to be four stories high, of reinforced concrete, will be located at Grand avenue and Twentieth street, and is to be completed not later than July 1 next.

A new schedule of hours went into effect in Connecticut rubber factories on January 1, to comply with the requirements of the law which limits the number of hours per week that women may be employed to fifty-five. Work will hereafter commence at these factories at 7 o'clock and end at 5:10, with an intermission of one hour at noon, making the working day nine hours and ten minutes long instead of ten hours as heretofore.

The Batavia Rubber Co., of Buffalo, New York, has established a branch for the distribution of its "Security Tread" tires at 844 North Broad street, Philadelphia, with E. M. Stimson as manager.

The corporate name of the Consolidated Rubber Tire Co., of New York, has been changed to the Kelly-Springfield Tire Co.

A fire which lasted for about an hour and did damage estimated at $2,500, occurred recently at the plant of the Housatonic Rubber Works at Bridgeport, Connecticut—caused by an attempt on the part of employes to thaw out a frozen water pipe with a torch, the blaze from the torch spreading to bales of rubber and paper.

The Barnard-Michael Tire Co., Inc., has been formed at Buffalo, New York, and duly incorporated, for the exclusive distribution in that section of Kelly-Springfield tires. The officers of the new company are Robert S. Barnard, president, and S. M. Michael, secretary and treasurer, and the office is located at 912 Main street.

A motion picture film company has recently produced a film showing the process of tire making, from the preparation of the crude rubber to the final testing of the finished product. This film is from pictures taken at the plant of the Pennsylvania Rubber Co. at Jeannette, Pennsylvania, and besides being unusually interesting and instructive, is remarkably clear.

The Voorhees Rubber Mfg. Co., of Jersey City, New Jersey, has opened another branch store at 41 Seventh street, Philadelphia.

HOLMES PACKING & SUPPLY CO. OPEN RUBBER STORE AT PEORIA.

The Holmes Packing & Supply Co., of 12-14 South Jefferson street, Chicago, Illinois, is opening a store in Peoria for the wholesale and retail distribution of rubber goods exclusively. This store, which is to handle every article made of rubber, and will be known as the Peoria Belting & Rubber Works, is located at 506 Adams street. The company is now, we understand, in the market for all kinds of rubber goods.

PERSONAL MENTION.

William F. Berrien, for a number of years manager of the Philadelphia branch of the Dayton Motor Car Co. and an active member of the Trade Association of that city, has been appointed sales manager of the Batavia Rubber Co. at Batavia, New York.

A. T. Carnahan, formerly with the Firestone Tire & Rubber Co., Akron, Ohio, is now the New York district representative of the Vulcan Rubber Co., of Erie Pennsylvania.

F. S. Wilson, vice-president of the Thermoid Rubber Co., of Trenton, New Jersey, has, with his family, taken up a residence in San Francisco and will make that city his future home.

C. E. Ames has been appointed general sales manager for the Divine Tire Co., of Utica, New York, with headquarters at Chicago.

Edward Gallagher, who was with the Boston Woven Hose & Rubber Co. for 24 years—in charge of the testing and inspection departments and later as foreman of the brass foundry and brass finishing departments—is now with the B. F. Goodrich Co. at its Boston branch.

George S. Atwater, of Boston, has been engaged by the Century Rubber Co., of Plainfield, New Jersey, as sales manager.

A. H. Alden, of the New York Commercial Co., sailed from New York on the *Minnewaska* on January 24, for Europe. He will join Mrs. Alden and his son Victor, who are now in Bristol.

E. Stevenson, director of A. H. Alden & Co., Ltd., of London, arrived in New York on the *Carmania* February 1.

CHESTER J. PIKE, JR., BECOMES "HUBMARK" PRESIDENT.

The presidency of the "Hubmark" Rubber Co., Boston, has been conferred upon Chester J. Pike, Jr., who is also its manager. Mr. Pike's business career has been confined exclusively to the rubber business, having been divided, prior to his association with the "Hubmark" company at the time of its formation in May, 1912, between the Beacon Falls Rubber Shoe Co., the Converse Rubber Co. and the Congress Rubber Co.

NEW MEMBERS OF THE RUBBER CLUB OF AMERICA.

At a recent meeting of the executive committee of The Rubber Club of America the following new members were elected: E. C. McGraw, representing the McGraw Tire & Rubber Co., of East Palestine, Ohio; Robert Badenhop, of 67-69 Wall street, New York and D. A. Cutler, representing the Acushnet Process Co., of New Bedford, Massachusetts, were elected firm members. Edward B. Aldrich, vice-president of the Continental Rubber Co., of New York, was elected active member; and W. F. Gillespie, of the Stamford Rubber Supply Co., Stamford, Connecticut; and Mr. R. E. Tyson, of Tyson Brothers, Inc., of Carteret, New Jersey, were elected associate members.

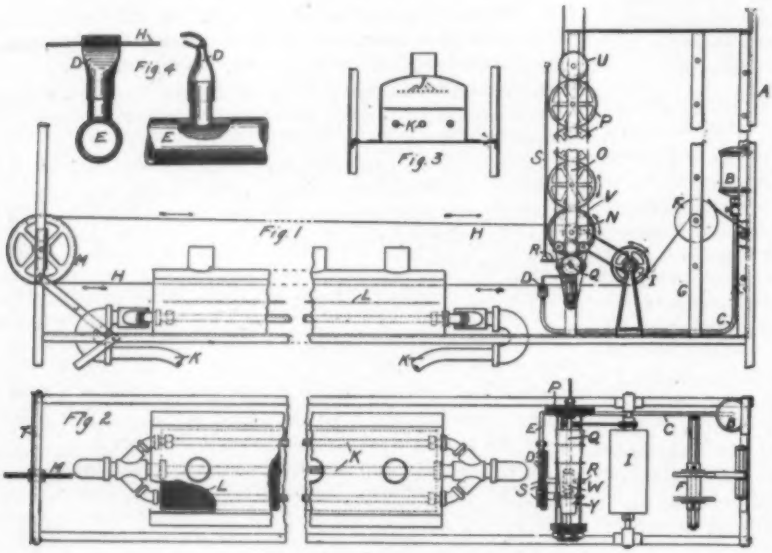
DR. DANNERTH RECALLS HIS CONFERENCE SUGGESTION.

In the columns of this issue devoted to interesting news from foreign quarters there will be found an article entitled "The Standardization Committee's Report," which gives a brief summary of the report submitted by the committee of the Rubber Growers' Association of London, appointed to consider the topic of standardization. The committee recommends the establishment of a testing station and an experimental factory so that plantation rubber can be standardized and sold under proper classifications. In connection with this action of the London association, Dr. Frederic Dannerth, the consulting rubber chemist, who acted as honorary secretary at the International Rubber Conference held in New York in September, 1912, recalls the proposal that he laid before that conference that a central testing laboratory for the rubber industry should be established by American manufacturers at their joint expense and for their mutual benefit. Tho the English planters have got the start in this respect, Dr. Dannerth still believes that the American manufacturers will find it so much to their interest to have such a testing and experimental plant that its establishment will not be very much longer delayed.

New Machines and Appliances.

A NEW WIRE COATING AND SPOOLING MACHINE.

ONE of the principal difficulties that have been experienced in machines for covering wire with insulating material has been the removal of the surplus material by means of a wiping device, since such devices usually tend to "spot" the insulation and thus prevent the use of such machines for perfectly insulating very small wires. A new machine designed for continuously and rapidly coating a large number of wires simultaneously has been patented by Myron D. Shiverick, of Albany, New York. One of the features of this machine is the new form of coating tip and the method of supplying the coating material to the tip.

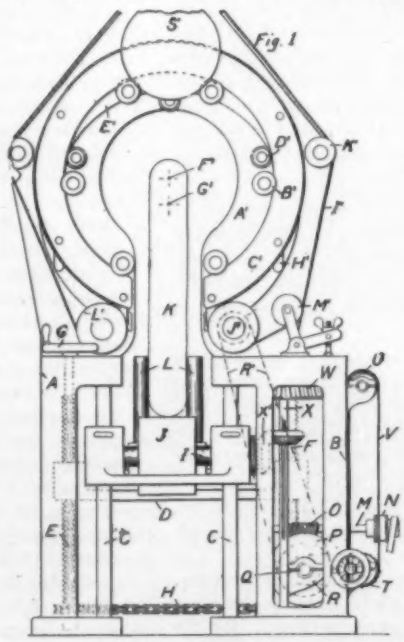


A NEW WIRE COATING AND SPOOLING MACHINE.

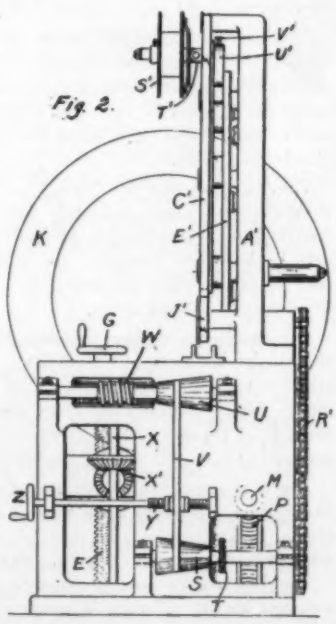
In the accompanying drawings Fig. 1 shows a side elevation of the machine, Fig. 2 a plan view, Fig. 3 a section through the drying oven, and Fig. 4 two views of the coating tip through which the wire passes. Attached to the frame *A* is a tank *B* which contains the insulating material in liquid form. The flow of this material to the coating tips through the supply pipe *C* is controlled by a stop-cock directly below the tank. The coating tips *D* are located side by side on the horizontal pipe *E*, and any number of tips may be employed according to the number of wires to be coated. The uncoated wire is wound on reels *F*, which are placed in uprights *G*, the height of the frame being controlled by the number of reels to be placed therein. At *H* is shown a single wire passing under a guide roller *I* and through the tip *D*, from which point it is conveyed through one of the holes *J* in the end of the oven. The oven is heated in any suitable manner, such as by a gas burner *K*, the wire being prevented from coming into direct contact with the flame by means of a screen *L*. By the time the wire has passed through the oven the insulation is thoroughly baked on, and the coated wire then passes around one of the pulleys *M* on the shaft *T* and back to the machine, where it is wound on a spool *N*. Any desired number of these wind-up spools are located on the uprights *O* and driven by gears *P*. A reciprocating shuttle *W*, operated by the screw-shaft *Q*, provides a means of winding the wire evenly on the spools. This shuttle bears a T-shaped bar *R*, in which are a number of vertical pins *S* which guide the wires as they come from pulleys *M* onto the wind-up spools. At the top of the standards *O* is a conical speed pulley *Y*, connected by a belt with a similar cone on a countershaft (not shown). This pulley bears a gear *U* and drives the screw-shaft *Q* through the chain *V* and a set of bevel gears, by means of which the shuttle is reversed in winding up the coated wire on the spools.

ANOTHER TIRE WRAPPING MACHINE.

As a general rule machines adapted for wrapping the treads of tires are designed for that one purpose only, but the machine illustrated in the accompanying drawings and upon which patents were recently granted, is designed for wrapping and unwrapping tires before and after the vulcanization process, for wrapping tires for shipping purposes, for removing the wrapper and also for covering wires and cables with paper, tape or cloth. Fig. 1 shows a front view of the machine, while Fig. 2 shows a side view, looking from the right of Fig. 1. The feeding mechanism, or that part which rotates the tire, may be described as follows: The supporting frame is made in two parts *A* and *B*



THE NEW TIRE WRAPPING MACHINE.



SIDE VIEW OF NEW TIRE WRAPPING MACHINE.

and supports four upright guides *C* upon which reciprocates the carriage *D* which is moved vertically by the screws *E* and *F*. The screw *E* is actuated by the hand wheel *G* and communicates motion to the screw *F* through the chain *H*. Two horizontal shafts *I*, having their bearings in the carriage *D*, carry rollers *J* against which the tire *K* rests in revolving. Two adjustable verticle rollers *L* hold the tire in position during its revolution. In order to rotate the rollers *J* for turning the tire the following mechanism is employed: The driving shaft *M*, provided with a clutch *N*, bears a worm *O* which meshes with a worm gear *P* mounted on the shaft *Q*. This shaft bears a sprocket wheel *R* which drives the cone pulley *S* through the chain *T*. A second cone pulley *U*, which is driven by the belt *V*, drives the worm gear *W* which is mounted on the upper end of the splined shaft *X*. This shaft drives a pair of beveled gears X^1 which in turn drive the rollers *J*.

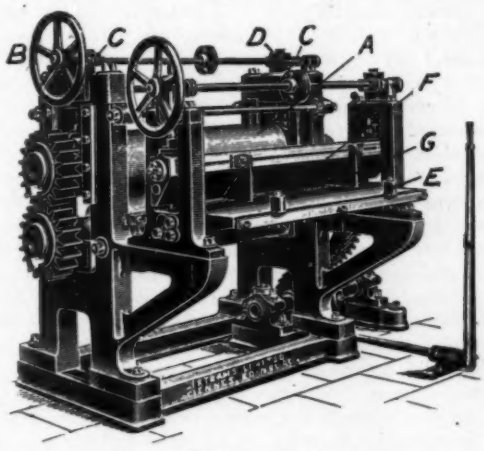
The mechanism for winding or unwinding a strip of material about the tire during its revolution on the rollers *J*, embodies another mechanism as follows: Mounted on the upper part of the frame is a second frame A^1 which is in the shape of a horseshoe. On the front face of this frame are a number of flanged rollers B^1 which bear a broken ring or annulus C^1. Also secured to the face of the frame are a second series of flanged rollers D^1 which bear a second annulus E^1. These two annuli are mounted eccentrically to each other; that is, the center of rotation of the first is at F^1 and of the second at G^1. These two parts are connected by links H^1 which hold them together but allowing them to revolve on different axes. The two broken rings are revolved by means of a belt I^1 passing over a roller on the shaft J^1, over a series of rollers K^1, over roller L^1 and thence around the outer ring C^1. In order to maintain a uniform tension in the belt, a tightening device M^1 is employed. Motion is communicated from the shaft *Q* through the sprocket chain R^1 to the shaft J^1 and thence to the belt I^1

The material to be wrapped around the tire is wound upon a bobbin S^1 which rotates against an adjustable tension spring T^1 in order to keep the wrapper at an even tension. The shaft upon which the bobbin is mounted extends through a link or crank U^1 connecting the two annuli. The end of this shaft is drilled to receive a pin V^1. If it is desired to wrap the tire, this pin is disengaged from the bobbin shaft so that the bobbin is free to turn independently of the link U^1. If a wrapper is to be removed from a tire and wound up on the bobbin so that it can be used again, the pin V^1 is engaged with the bobbin shaft so that the latter cannot rotate independently of the annuli. Thus, as it passes around the tread of the tire the wrapper will be removed and wound up on the bobbin.

By means of a flanged roller on the screw shaft *Y*, which is operated by the hand wheel *Z*, the belt *V* may be moved back and forth over the cone pulleys to regulate the speed at which the tire is revolved. [U. S. Patent No. 1,079,601, granted to C. Kuentzel and assigned to the Goodyear Tire & Rubber Co., Akron, Ohio.]

NEW BELT MAKING MACHINERY.

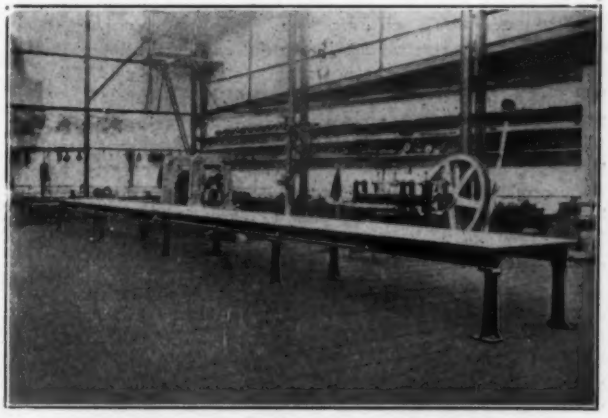
The two illustrations herewith show some new forms of apparatus designed for the manufacture of balata belting. Fig. 1 shows a belting calender which is used for spreading on the outer covering of balata after the fabric of the belt has been built up. It is also used for consolidating the belt after being previously folded on the hot table. The top roll *A* is suitably grooved so as to leave an impression on the surface of the belt. This roll may be adjusted vertically by means of the hand wheel *B* operating worms *C* and worm gears *D* the same as in the ordinary calender. The belt is inserted between guide rollers *E* and passes under the steam heated gage *F* between the guides *G*, which prevent the balata from overrunning the edges of the belt. Scraper gages, not shown, are provided between the gage *F* and the calender rolls to trim the edge of the belt. The machine is driven through a pair of reduction gears and countershaft



BALATA BELTING CALENDER.

either by a belt or by direct connection through spur gears to the main drive shaft.

Fig. 2 shows a section of a hot table for building up balata belting in great lengths. The whole table, only a part of which is shown herewith, is 130 feet long and 4 feet wide. It is built in short hollow sections of riveted mild steel plates carried on steel channels and cast iron stands from the floor, each section forming an individual steam chest or hot plate. The heating and draining arrangements are designed to provide a uniform temperature throughout the whole length of



STEAM TABLE FOR BUILDING UP RUBBER.

the table, the separate sections being connected with a common steam line. Such hot tables can be constructed in any length and width to meet the requirements of any size of belt. [Bertrams Limited, Edinburgh, Scotland.]

A NEW RUBBER TRIMMED AUTOMOBILE CURTAIN.

A new style of automobile side curtain—known as the "New Scott"—has been brought out by a Western manufacturer. This curtain is adjusted and operated from the inside of the car by means of fixtures which are easily attachable. The curtains are held securely in place when in use by hooks or other simple fasteners, and when released automatically roll up out of sight. They are trimmed in heavy rubber drill, in drab or black, as preferred, or may be had with imitation leather or mohair trim. [Star Storm Front Co., Troy, Ohio.]

NEW TRADE PUBLICATIONS.

THE LITERATURE OF THE UNITED STATES RUBBER CO.

THE United States Rubber Co. in its annual issue of catalogs has not as yet reached the number of kinds associated—in quite another line—with the energetic pure food advertiser who lays such stress upon his "57 varieties," but it is not far behind him, as its catalogs and price lists issued on the first of January numbered forty-two—which might be called a library of modern rubber footwear.

Of these 42 different publications 10 are handsome catalogs of a uniform size of 4½ x 8½ inches; that is, good pigeon-hole or coat-pocket size. These are books of 64 pages, unstintedly illustrated and bound in handsome covers. These ten volumes describe the footwear of the following ten companies: The American, Banigan, Boston, Candee, Goodyear Glove, Lycoming, Meyer and Jersey, Malden, Wales-Goodyear and Woonsocket. The cover designs are strong and striking and while all entirely different in design are uniformly artistic.

The text is printed on high grade heavy coated paper, which brings out the halftone illustrations in the most effective way. These halftones, by the way, are of large size and are photographed direct from the object, giving a very exact idea of what the different boots and shoes look like and the shapes of the different lasts.

In addition to the larger illustrated catalogs there are 32 small price lists about 3½ x 6½ inches in size. Ten of these give the gross prices of the different brands mentioned above, and another set of ten gives the net prices of the same brands. Formerly the company issued only gross lists with an accompanying card showing what the net would amount to when the various discounts were deducted, but as the retailer was quite likely to lose his discount card it often devolved upon him to work out from his own personal knowledge of mathematics how much a boot with a gross price of $3.67 would cost him with a chain of discounts of 15, 8 and 3 per cent. That was a problem sufficient to drive many a retailer into socialism, if not open anarchy. Now they have been relieved from this mental strain and can tell at a glance just what they will have to pay for any particular item they wish to put in stock.

The other price lists include those of the Empire brand, of the much advertised Everstick Rubber, the Felt Boot and Knit Boot combinations, the Unika brand of Tan and White Rubbers, a list of miscellaneous goods and another list—paradoxically called the Unlisted List—which shows special shoes that can be had if desired but for which evidently the company is not anxious to excite too great a demand.

One of President Wilson's strongest desires in relation to large corporations is that their operations shall be conducted with great publicity. In view of these 42 different catalogs and price lists, he cannot complain that the selling department of the United States Rubber Co. is trying to hide anything.

METALINE.

In a neat booklet, the Metaline Co., of Long Island City (of which R. W. Rhodes & Co. are lessees), has published a synopsis of answers to the question "What is Metaline?" It is stated that the substance is a standard material, recognized by mechanical and engineering handbooks, and is a typical solid lubricant, which permits bearings thus fitted to run without any other lubrication. It is composed of metallic oxides and other substances, reduced to an impalpable powder and then solidified in hardened steel molds under great pressure into short length cylinder plugs. The principal features of its applications are effectively illustrated.

"EXTRA SERVICE."

We are in receipt of Nos. 1 and 2 (Vol. 1) of a semi-monthly publication issued by and in the interest of employes of the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin. This paper is edited by J. H. Dixon and will devote space to news items of interest to its readers, happenings in the various departments of the company's plant, contemplated changes, etc. In the initial number the right is claimed to say, in humorous vein, almost anything, about almost anybody, around the plant. The object of the publication is to establish a feeling of fellowship and foster a spirit of co-operation. That this feeling and spirit are already pretty well established seems evident from the fact of the publication's immediate growth, No. 2 having assumed a size of 6½ x 9¼ inches, with 14 reading pages, as against the 8-page, 5½ x 8½ first number.

The American Insulated Wire & Cable Co., of Chicago, has issued a booklet containing prices of its various lines of weatherproof wires and cables, etc., certain pages of which are devoted to price fluctuations since 1905 and monthly averages in copper prices for the past 30 years. This is a very compact and useful pamphlet, containing beside its 24 pages and cover 8 blank pages for private memoranda.

Catalog M H of the New York Belting & Packing Co., Limited, of 91-93 Chambers street, New York, is devoted to a description of "Magic" hose, one of the many varieties manufactured by this company. Originally intended for garden hose only, this Magic continuous hose—both cover and tube of which are seamless, the latter reinforced with one or more layers of tightly braided yarns with a distinct layer of rubber between braidings—has been adopted for the larger sizes of water hose, as well as for chemical, air drill and pneumatic tool hose, etc. The merits of each of these varieties has been set forth in this catalog, which contains also price lists and telegraph code.

CALENDARS AND SOUVENIRS FOR 1914.

THE TREMENDOUS OUTPUT OF COMMERCIAL CALENDARS.

THE January issue of THE INDIA RUBBER WORLD described a number of calendars issued by different rubber companies, and some calendars received since are described in this issue. Calendars have always been a popular means of advertising with the rubber trade. The statistics for the current year are not available, but in some past years the number of rubber calendars has run into very large figures—the United States Rubber Co. alone sometimes issuing well towards 1,000,000 copies.

Very few people have any conception of the enormous output of commercial calendars. One company alone, the American Lithographic Co.—which has probably printed the largest number of calendars for rubber companies—printed special commercial calendars for 1914 to the number of 14,000,000; and there are other lithograph companies also doing this same sort of work. It is stated by a lithographer in a position to know, that in addition to the special calendars prepared for the larger companies, stock calendars which are sold in smaller quantities to lesser advertisers would amount in value for 1914 to over $10,000,000. It is quite possible that there are as many commercial calendars printed as there are people in the United States, perhaps more; but even so, the number would not be excessive, for most people want a calendar of some sort in every room in the house, and most business men want a calendar on all the walls of the office, so that whichever way they look they can always see what day it is. The fact that companies that distributed calendars thirty years ago are still distributing them—only in vastly larger quantities—seems to prove that this is a profitable kind of publicity.

"A Monarch of the Hills" is the title of the picture which adorns the calendar of the Derby Rubber Co., rubber reclaimers, of Shelton, Connecticut. This is a reproduction, 11 x 13½ inches in size, of the painting by Philip R. Goodwin of a far northern scene, in the foreground of which a splendid moose stands, knee deep in a mountain lake, intent,

tho apparently calm and unafraid, in all the grandeur of his forest solitude. The water of the lake reflects the golden yellow of the western sky at twilight, and the pine-clad hills of the background are enveloped in that blue haze that heralds the coming of a clear, starry night. This picture, expressive of the majesty of nature, is mounted on a background of black, the body of the card being in light brown with a ¾ inch black border; and the hanger as well as the cord that attaches the calendar pad is of green silk.

The J. H. Stedman Co., scrap rubber merchants, of South Braintree, Massachusetts, have sent out a very handsome and useful calendar showing, on a background of white, a photograph, in shades of brown, of the Chain Bridge over the Merrimac at Deer Island—the first suspension bridge ever built in the United States and the second in the world. This is the eighth in a series of New England scenes.

The Essex Rubber Co., Inc., of Trenton, New Jersey—makers of mechanical specialties—have distributed calendars of the lithographed poster variety, in two styles, each 12 inches wide by 17 high and with a calendar part attached to this card, the entire width of the card and 7 inches in length. These advertise in effective manner the "Essex" rubber sole and the "Tred-Lite" rubber heel, one picture showing, in red and green on a tan background, a young woman in tennis costume in the act of replacing her slippers with oxfords of the rubber-soled outing variety, and the other, in black and shades of brown on a green background, showing a young man seated in a chair tilted back at a comfortable angle, in a reflective and contemplative mood—induced probably by the cigar he has been smoking and the ease afforded by his rubber-soled and heeled oxfords. Posters in the same styles are also supplied without the calendar, but with hanger attachment and cardboard support for window or counter display.

The Portage Rubber Co., of Akron, Ohio, have favored their friends with a very chaste and tasteful little desk calendar consisting of a small monthly pad mounted on a standard about 4 inches wide and 4 or 5 inches high, made of solid brass. In some cases they have etched the recipient's name in a little panel left for that purpose at the top of the standard. To many people this personal touch will undoubtedly add to the attractiveness of the calendar.

The Derby Rubber Co., Derby, Connecticut—manufacturers of reclaimed rubber—have distributed a calendar for the month of January in the form of a panel about 5 x 10 inches, the upper half of which is devoted to a scene entitled "In the Northland." The picture lives up to its title, as it is a scene of snowy peaks and general northern cold. A hunter tramps along the foreground on his snowshoes, while a procession of rugged Eskimo dogs pull a sled that presumably carries the camping equipment. The company states that it has twelve of these "Close to Nature" pictures, one for each month.

The North British Rubber Co., Limited—which is generally conceded to be the largest rubber manufacturing company in the British Empire—sends its customers and friends a large wall calendar giving a bird's eye view of its great plant at Edinburgh. At the center of the card is a calendar pad with a leaf for each day and figures of sufficient size to be legible at a very considerable distance.

Elbert O. Jeralds, of 1328 Broadway and 47 West Thirty-fourth street, New York—representative of The Canton Rubber Co. of Canton, Ohio—has supplied the trade with a very dainty little calendar 7 inches wide and 14 inches in height with a 3½ x 8 inch center panel showing, on a dark brown background, a young woman in street costume of tan with brown furs, the touches of red on her green hat and at her throat harmonizing with the charming pink freshness of her cheeks. This panel is mounted on a gray card which in turn is mounted on white, the calendar part and the ribbon hanger being also in white.

The Electric Hose & Rubber Co. of Wilmington, Delaware, with branches at New York, Philadelphia, Chicago and San Francisco, which makes a specialty of rubber hose, has sent to its friends and customers a desk pad 9 x 5½ inches in size, which combines the offices of calendar and daily memorandum pad.

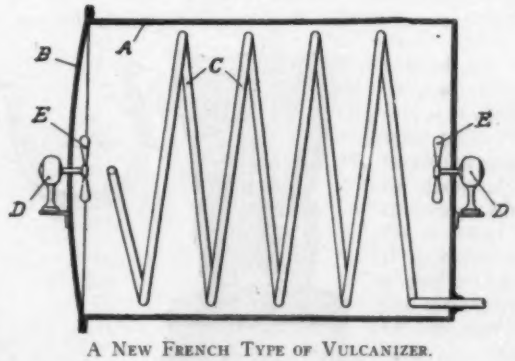
The Dunlop Tire & Rubber Goods Co., Limited, whose head offices and factories are located at Toronto, Ontario, and having branches not only in the east but in many of the principal cities throughout the western provinces, distributed a lithographed wall hanger conveying greetings for Christmas, 1913. This pictures the "shade" of a departed buffalo, which, on viewing the industrial progress of the country in which he once ranged unmolested, exclaims "My, how my trail has changed!"

David Bridge & Co., Limited, manufacturers of rubber machinery, of Castleton, Manchester, England, have sent us an especially handsome and useful pocket diary, bound in brown leather, with divisions in the inside of the cover forming compartments for postage stamps, bills, etc. The book is divided into two parts, one containing a number of pages devoted to general and useful information, calendar and space for daily memoranda, addresses, etc., and the other half of blank pages, the space between being provided with a pocket which contains an unusually attractive little pencil.

"The West India Committee Circular," 15 Seething Lane, London, has forwarded a calendar 9 x 6 inches in size, with a view in colors entitled "The Sunday Market in Antigua."

HOT AIR VULCANIZER.

In the past it has been found difficult to vulcanize rubber by means of hot air on account of the uneven temperature which usually prevails in different parts of the apparatus. The device illustrated in the accompanying drawing, however, is claimed to solve this difficulty and to make vulcanization by means of hot air as efficient as by any other process. The large steel tank *A*



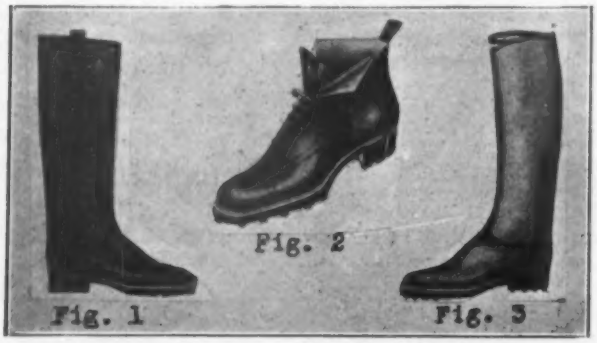
A NEW FRENCH TYPE OF VULCANIZER.

is closed at one end and has a hinged door *B* at the other. Inside the tank is a steam coil *C* which is heated from a steam generator on the outside. At each end of the tank is a small electric motor *D* communicating with a fan *E* on the inside. During the entire period of vulcanization the fans are kept in motion in order to stir up the air and maintain an equal temperature in all parts of the tank. The vulcanizer may be made in any shape and size to accommodate tires or smaller rubber articles, while the heating of the interior may be effected by means of coils of any shape, placed spirally or lengthwise. If desired, a steam jacket may be substituted in place of the coils. The fans may be operated by any available source of power through a belt from a line shaft, altho electric motors are preferable for this purpose.

New Rubber Goods in the Market.

LEATHER BOOTS LINED WITH RUBBER.

HERE is something new—at least new to most American readers—in the shape of rubber-lined leather footwear. A great many people like to adhere to leather footwear because of its appearance but at the same time, very naturally, want footwear that in bad walking and in driving rains will still enable them to keep dry shod. An English manufacturer seems to have met the situation. Here are three styles of leather footwear, rubberized to the extent of rendering it waterproof. Fig. No. 1 shows a boot intended for fishing or shooting. It is made of strong leather,



with a lining, and then is coated with a stout layer of rubber, making it possible for the wearer to walk through wet fields all day without any danger of wet feet.

The other two represent a shoe and a boot which are made of leather, lined with leather, but have a thin interlining of rubber, which keeps the wearer dry shod under all conditions. (J. C. Cording & Co., 19 Piccadilly, W., London.)

THE DUO NOZZLE.

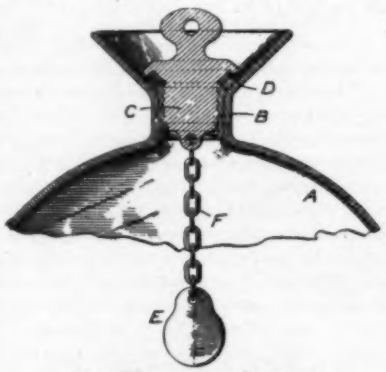
A combination hose nozzle and lawn sprinkler of small cost has been placed on the market, under the name of the "Duo" Nozzle. A glance at the illustration will clearly indicate its construction, and how it may be used in either capacity. This device produces a spray after the water has issued from the nozzle, so that the volume of water is not in any way diminished. It also throws both a straight stream and spray without the necessity of a shut-off. The nozzle portion is made of wrought brass, finished inside and out. [The H. B. Sherman Manufacturing Company, Battle Creek, Michigan.]

THE HANDMADE CHAMPIONSHIP TENNIS BALL FOR 1914.

While the Hand-Made Championship Tennis Ball made by the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, and first placed on the market some four years ago, has not only been well received, but grown in favor with the trade, investigations of the subject of manufacture with a view to tournament requirements have resulted in evolving a tennis ball for 1914 that is said to possess material advancement in both playing quality and serviceability and that will no doubt further increase the popularity of this company's product. This new 1914 tennis ball is made on a mould slightly larger than the regulation size, with walls of purest Ceylon rubber, with high-grade rubber veneer interior and is sewn with paraffin-treated thread, entirely overcoming the too frequent tendency of tennis balls to have their seams loosen upon exposure to dampness.

YOU CAN'T LOSE THIS STOPPER.

A great deal of trouble and annoyance is often caused by mislaid stoppers, especially where the stopper is for the hot water bottle, which is usually wanted in a hurry. In the accompanying drawing is shown a hot water bottle fitted with a stopper which cannot become detached from the bottle. Inside the neck of the bottle *A* is vulcanized a threaded socket *B*, into which the stopper *C* fits. These two parts are double threaded so that it requires only half the usual time for screwing the stopper down against its seat. Another feature lies in the fact that the stopper seats against the top of the socket instead of against a projecting flange at the lower end. This allows a maximum opening for filling the bottle and also forms a funnel-like flare at the top. The stopper is provided with a gasket *D*, which seats against the flange of the socket. The most important feature, however, lies in the fact that the stopper is provided with a retainer *E* attached in a ring at its lower end by means of the chain *F*. This retainer is merely a piece of sheet brass made wider than the diameter of the socket *B* so that the stopper cannot be detached after being unscrewed. The brass retainer is bent in order to allow it to pass into the bottle, after which it is flattened out with a special tool. [Robert J. Wilkie, 18 Tremont street, Boston, Massachusetts.]



NON-DETACHABLE STOPPER.

A RUBBER CRUCIBLE HOLDER.

The illustration herewith shows Bailey's new crucible holder, which is made of rubber, accommodating a 25 cc. porcelain Gooch crucible. It is made to fit an ordinary 2-inch glass funnel, the upper edge projecting over the edge of the funnel and thus making a tight joint. The lower edge of the holder is beveled and rests against the sides of the funnel, thus increasing the tightness of the joint when suction is used on the funnel. It is said that the holder has met with the approval of practical chemists, as its use obviates the inconvenience incident to the use of the older style of rubber covered glass holders. [Sold by Eimer & Amend, New York City.]

BAILEY'S RUBBER CRUCIBLE HOLDER.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

EVERLASTIK.

The trade mark "Everlastik" has been registered at the United States patent office as the name of a new garter web, and a patent applied for on the exclusive process by which it is made and by reason of which the rubber strands are prevented from slipping back when cut by a needle and leaving the web lifeless. Everlastik is claimed by the manufacturers to retain its elasticity under all conditions and is described by them as "The Garter Web That Outlasts the Corset." In its wider widths it is also used by corset makers for gores, insets, bands, etc., to add to the comfort of the corset. (Hub Gore Makers, Boston, Massachusetts.)

EVERLASTING GAS TUBING.

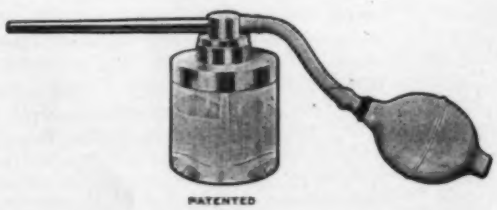
According to an advertisement appearing in a recently issued periodical, patent has been applied for on a gas tubing under the above name. This tubing is put up one piece in a box and is guaranteed in every respect, having been approved on tests made by the Good Housekeeping Laboratory. (The Chicago Tube & Braiding Co., 216 North Clinton street, Chicago, Illinois.)

THE LITTLE RUBBER KEWPIE.

Everyone who loves dolls, either as a memory or because of some little one who loves them, will be glad to know that the "Kewpie," the present fad in dolls, is being made of rubber, and that no longer need young hearts be broken because of broken heads. The rubber Kewpie has a soft, cool, fat little body, just as his originator first saw him in her dreams, and not only will he gracefully and smilingly endure any amount of loving, but will outlive even the most loyal of childish affections. His production in rubber will probably eliminate any malicious tendencies he may have inherited from the real cupid from whom he takes his name, and while his color may be a trifle "off," his charm is none the less appealing. In the past he has been presented only in a standing position, but he is soon to appear seated, with his chin in his hands, and with the same startled coyness of expression. His popularity in rubber and in his new form will probably be as great as that accorded him in bisque and celluloid.

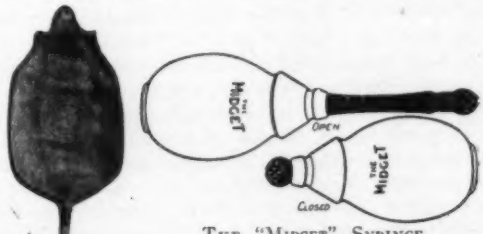
RUBBER AIDS TO SANITATION AND HEALTH.

One of the latest practical sanitary inventions placed on the market is the "Multiple" atomizer here illustrated. This is simple in construction and by its use three different fluids may be sprayed from the same bottle simply by turning the atomizer head around until the rubber bulb here shown comes over the fluid desired to be sprayed. The convenience of this feature and the saving in time and space are very apparent.



THE "MULTIPLE" ATOMIZER.

Other recently adopted scientific appliances included in the output of this company are the "Midget" syringe—so called because while of sufficient size for the purpose intended it may be folded into very small space—and the "Safe Health" internal bath spray combination for private or hospital use, claimed by the company to be the most sanitary device of its kind on the market. The accompanying illustrations show this spray in its various combinations. [Hospital Rubber Co., Attleboro, Massachusetts.]

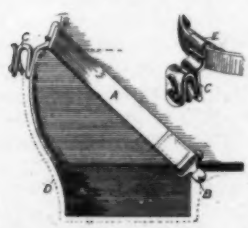


THE "MIDGET" SYRINGE.

THE "SAFE HEALTH." INTERNAL BATH SPRAY.

TO MAKE YOUR RUBBERS STICK.

Everyone has had the experience of having his rubbers pulled off in the middle of a muddy street at the very time when he needed them most. A thoughtful inventor has designed a clamp for preventing this. The device consists of an elastic band *A* passing around the back of the shoe and connected with a rubber-covered wire *B* running across the shoe in front of the heel. In the centre of the band at the back is a clamp *C* by means of which the rubber *D* is held in position. The elastic strap may be made adjustable so as to fit any size of shoe and it is provided with a corrugated rubber strip *E* to assist in keeping the strap from slipping down.



CLAMP TO HOLD YOUR RUBBERS ON.

A NEW MATERIAL FOR WATERPROOF GARMENTS.

A material known as "Escourta," made of a combination of cotton and artificial silk, and proofed by the Cravenette process has been brought out for use in the manufacture of raincoats, the samples shown including a number of black and white checks and mixtures. Coats of this material, in addition to their waterproof qualities, are suitable also for motor and dust coats, the sheen of the silk rendering them particularly attractive in appearance. The manufacture by this company of artificial silk has been developed to the extent that this product is now guaranteed to stand the test of washing, and the belief has been expressed that Escourta will be received with great favor as a raincoat material for both men's and women's wear. (S. Courtauld & Co., Ltd., 354 Fourth avenue, New York.)

Some Rubber Interests in Europe.

SYNTHETIC PRODUCTS CO., LTD.

THE recent meeting of the Synthetic Products Co., London (under the presidency of Mr. P. B. Rackett, chairman of the company), was marked by various interesting statements as to its condition and prospects. It will be recalled that at the time it was started a conservative policy was decided on, and was carried out by the erection of a small plant at Rainham, Kent, where the possibilities of the commercial preparation of acetone and fusel oil were tested.

In the interim report of June 21, 1913, the directors were in a position to state that trials on an extensive basis of acetone and fusel oil, contemplated by the original prospectus, had produced results more satisfactory than had been looked for, fermentation on a large scale taking only one-fourth of the time occupied in trials on a smaller scale. At the same time, they were able to report having leased (with right of extending term to 56 years) dock-side land and premises at King's Lynn, Norfolk. They had also secured a large factory (previously used as an oil mill), which, as well as a number of warehouses, had been equipped for the company's business. So far 24 enameled fermentation tanks, each of 4,000 gallons capacity, have been provided, of which the first six were placed in operation during November last. Thus, within about four months after beginning work, fermentations on a commercial scale were being carried out, with results better than those of laboratory practice; and further important economies are looked for in the future manufacture of acetone and fusel oil.

Among the other advantages of the King's Lynn site is its proximity to the sources of supply of potatoes (largely used in the company's products), mangel wurzel and sugar beets, which are grown in Norfolk. Moreover, the site is remarkably convenient for drawing from the Baltic ports the sawdust which might ultimately be used in the company's processes. It is also a suitable point for exports of the products to be manufactured.

SYNTHETIC RUBBER.

A small plant being now in operation, it is expected to produce sufficient rubber for practical tests. So far the quality turned out has been satisfactory. It is hoped to issue by the middle of this year an interim report upon the mechanical tests of synthetic rubber, which are apparently the only ones that manufacturers will consider, good lasting qualities being an essential requirement.

In seconding the adoption of the report, Sir William Ramsay emphasized the policy of the company in testing everything on a small scale before going further, thus saving alterations and consequent expense. He considered it would be inadvisable to put up a large factory, in advance of being certain as to the points before them. A unit has been produced which works well, and it will be multiplied until, say, 60 pounds of rubber a week are produced for testing purposes. Results so far have surpassed expectations.

In reply to a shareholder, the chairman said that about £20,000 would be in hand after erecting the plant at the present works, which would carry on the company for several years.

CRUDE RUBBER WASHING CO., LTD., LONDON.

In addressing the third annual general meeting of the above company, the chairman, Mr. Alfred Armitage, lately stated that in the revaluation of the assets, the freehold property had been written down about 50 per cent. The company had, it found, been infringing certain rubber-washing patents, and under legal advice ceased to do so. A large stock of old rubber had been sold since the last meeting. Other items of assets were in course of liquidation.

Regarding the future prospects of the company, a certain quantity of rubber is being washed and dried but, naturally, without a large profit. A mixing plant has been installed, which is supplying compounds to a good many English motor firms. In furtherance of the policy of manufacturing some finished article, the production of a cab tire was begun, which has been largely taken up for jinrickishas. The report stated that the company, after many vicissitudes, is now starting on a sound business career.

THE FOURTH INTERNATIONAL RUBBER AND ALLIED INDUSTRIES EXHIBITION, LONDON, 1914.

Official recognition has been given the Fourth International Rubber and Allied Industries Exhibition—to be held in London next June—by the Syndicale Chamber of Rubber Manufacturers of Paris, thus completing the list of important associations in all parts of the world in any way connected with the rubber industry that have accorded recognition to this exhibition. This list includes: The Rubber Growers' Association of London; the Planters' Associations of Ceylon, Indo-China, British Malaya, Malacca, Johore, Southern India and Java; the Rubber Association of Holland (Amsterdam); the Commercial Associations of Pará and Amazonas, the Republic of Peru and other producing countries; the Rubber Manufacturers' Associations of France, Germany, Austria and Belgium; the Rubber Club of America and all the important exhibition associations in all parts of the world. Every important producing country is expected to be officially represented at this exhibition.

NEW ENGLISH RUBBER FACTORIES IN 1913.

Among the English factory extensions during 1913 were the new works of the Leyland & Birmingham Co., at Leyland, and additions to the Stirchley plant of the Capon-Heaton Co. An extensive factory is being constructed at Southampton for Messrs. Pirelli & Co., while Rubastic, Ltd., has erected a factory at Southall. A new waterproofing plant has been installed by Messrs. A. O. Ferguson & Co. at Hollinwood, Manchester. Other new factories included the works of T. Dowler & Co., Broadheath; Laughton & Son, Droylsden, and the Swan Rubber Co., Stockport.

NEW SCOTTISH RUBBER COMPANIES.

Five new rubber companies were registered in Scotland during 1913; the total capital being equal to $642,500. In 1912 ten companies were established, the combined capital of which equalled $1,592,500.

MR. H. A. SCHMIDT WITH R. HUNTER CRAIG & CO.

Mr. H. A. Schmidt, for many years associated with the firm of A. H. Alden & Co., Limited, has assumed the management of the rubber department of R. Hunter Craig & Co., Limited, whose headquarters are at 7 London street, Mark Lane, London, with branches at Glasgow, Liverpool, Dublin, Belfast and Cork.

REDUCED FREIGHT ON RUBBER.

Advices from London state that the Eastern steamer lines have reduced the freight on plantation rubber from 76s. ($18.50) to 65s. ($16.00) per ton of 50 cubic feet; this being the rate from Port Swettenham to London. In connection with the reported intention of the steam companies to improve their Eastern service, further reductions are expected in the immediate future.

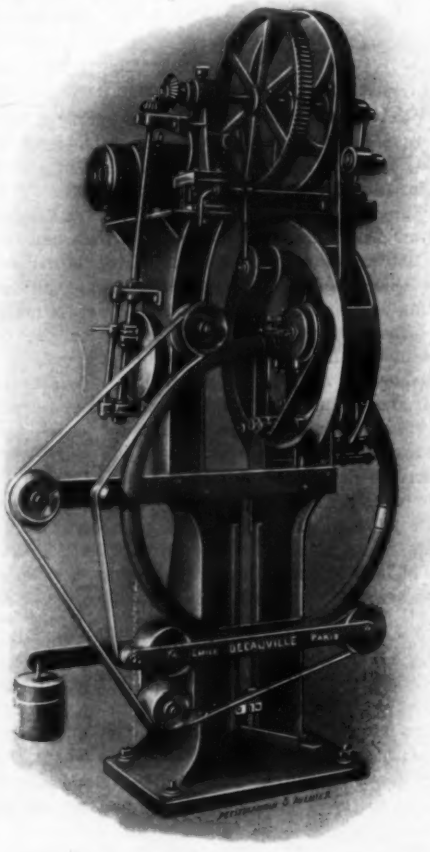
C. Hirch & Co., rubber brokers, of London, E. C., announce a change of address, being now located at 21, Mincing Lane.

The Rubber Growers' Association, of London, announces a change in its address, which is now 38 Eastcheap, London, E. C.

Rubber at the Paris Automobile Salon.

By a Special Correspondent.

WHILE there has undoubtedly been progress of late years in the European tire industry, it must be admitted that such progress has been slow. A good deal still has to be done in that branch of the rubber industry. The aim of inventors was formerly to prevent the bursting and puncturing of tires, in which endeavors they used systems more or less of a complicated and expensive nature. All these inventions and systems have completely disappeared. Today every one understands that the pneumatic tire should be light and, above all, extremely resilient; the latter quality being the principal reason for its existence.



DECAUVILLE WRAPPING MACHINE.

Tires formed the most interesting object as regarded rubber in the Fourteenth Automobile Salon, recently held in Paris, but the exhibits included only standard types of pneumatic tires with anti-skid treads in round or flat outlines, and with steel rivets upon foundations of leather. This style of tire is the most popular in France, being preferred to one entirely of rubber, and being practically free from the risk of punctures, while maintaining a sufficient degree of resiliency. It was brought out in 1907 by Michelin & Co., and has since remained in favor, superseding the other more complicated styles.

DECAUVILLE WRAPPING MACHINE.

The principal improvement seen at the exhibition has been in connection with the wrapping of tires. It was for a long time customary to vulcanize tires on straight mandrels, and to unite them after vulcanization. This method having been found inconvenient, tires are now made in a number of factories on circular mandrels. This allows of the definite shape they will have when in the tires being obtained during vulcanization.

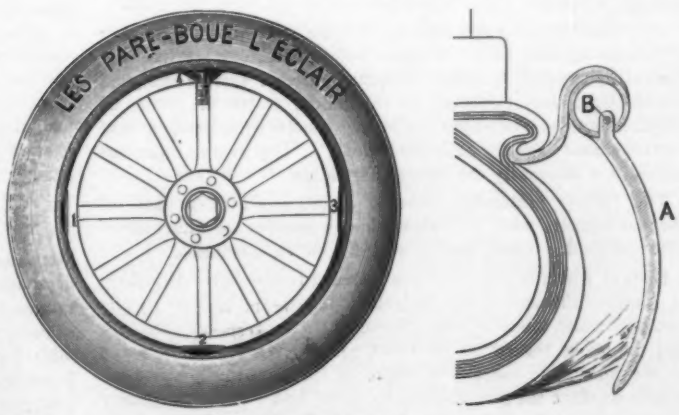
But this operation is not easily performed by hand, and the wrapping of the bands of fabric round the air-chamber is a lengthy process. M. Emil Decauville, a well-known machinist, has elaborated a machine for the mechanical wrapping of these bands, which is said to effect its purpose successfully, and is illustrated herewith. It includes a wheel, cut to allow the passage of the mandrel, and is simple in its operation. The machine is operated by an endless band passing over aluminum guides. A guide likewise regulates the tension of the fabric.

The wheel carrying the bobbin is set in motion by a belt covering five-sixths of its surface, thus giving considerable motive power. A connecting pulley to receive the motion is attached to the machine, which can also be directly driven by an electric motor, as shown in the annexed cut.

It is anticipated that this manufacture of tubes on circular mandrels is an improvement which will be adopted by all makers of pneumatic tires.

MUDGUARDS.

Mudguards first received attention at the Thirteenth Automobile Salon, referred to in the March, 1913, issue of THE INDIA RUBBER WORLD (page 328). As the question continues to be of current interest for rubber manufacturers, some further details are given of the "L'Eclair" system, briefly referred to in the above-named article. This type is said to have given satisfactory results and is represented by cut shown below. The Shield A consists of a circular band of rubber with one or two layers of fabric lining. The attachment-rod B is shown on the side. The movable plates 1, 2, 3 and the extensible plate 4 insure the firm hold of the whole appliance on the rim. This mudguard can be applied equally well to all wheels with wooden or metallic spokes, and likewise to emergency and twin wheels. It can be fitted very



L'ECLAIR MUDGUARD.

A = Rubber shield.
B = Attachment rod.
1, 2, 3 = Movable plates.
4 = Extensible plate.

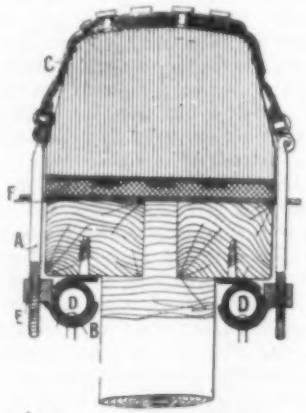
rapidly and without altering the wheels and its merits have been officially recognized in various trial competitions.

Several other mudguards were exhibited, consisting, like that described, of a kind of circular band in rubber or in rubberized fabric, fixed to the wheel in different ways.

THE "KROL" ANTI-SKID.

The rapid increase of the conveyance of goods by motor trucks has been followed with interest by rubber manufacturers, who have found in this new form of transport important outlets for rubber tires.

Up to the present, pneumatic tires do not seem to have been employed for relatively heavy vehicles. They are used for light carts, while solid tires are reserved for trucks carrying heavy loads. Certain so-called "heavy load" trucks are still mounted on wheels with steel tires; sometimes bearing hollow impressions to prevent skidding. These trucks have been the cause of numerous complaints, as they make a great noise, damaging the roadway and shaking the houses.



THE KROL ANTI-SKID FOR HEAVY LOADS.

Consequently, the authorities of several large cities have issued ordinances prohibiting the use of "heavy load" trucks for the transport of materials or merchandize, unless the wheels are fitted with rubber shock-absorbing tires, or other tires preventing or materially diminishing vibration.

The question of solid or of cushion tires, already of considerable interest for rubber manufacturers, is likely to become more so, for in a short time all heavy-weight vehicles will have to be fitted with rubber tires.

When these vehicles travel on wet roadways skidding is always to be feared, particularly in starting, turning, or applying brakes; this skidding being dangerous for the drivers, for pedestrians and for other vehicles.

Inventors have been endeavoring to solve this problem of anti-skid tires for motor trucks. These "anti-skids" are usually composed of a band of leather studded with rivets, like those employed for pneumatic tires. These treads are secured directly on the tire, or they are applied to it with fixed or changeable tension.

Up to the present the various systems introduced, with one or two exceptions, have not given very satisfactory results. Attention is claimed, however, for the anti-skid system designed by M. Krol, and exhibited at the Salon, under the name of "Krol Protective Anti-Skid for Heavy Loads, with Resilient and Instantaneous Pneumatic Connections." This very ingenious anti-skid is shown by the above illustration.

The "Krol" protective anti-skid is composed of a band of chrome leather, with steel rivets and a number of attachments with pneumatic tubes and threaded rods in channels.

Rods *A* with their hooks *B* are fastened to the plates of leather *C*, passing through holes previously made in the rim *F*, the two pneumatic tubes *D* being placed in their respective channels, and the hooks resting on the tubes. A few strokes of the pump in the pneumatic tubes will suffice to instantaneously and uniformly produce the anti-skid effect on the tire. The arrangement of the rods and of the threaded tube *E* allows of an adjustment at long intervals, upon the leather stretching.

The operation of this anti-skid can be easily understood in its entirety; the pressure of the air in the pneumatic tubes ensuring the tension of the rods and of the leather on the tire. This air pressure in the tubes is uniform and constant at all points. It therefore follows that the tension of the anti-skid on the tire is likewise uniform and constant in all its parts; not only when at rest but also whatever may be the deformations of the tire when in operation. As may be easily seen from the above description, the anti-skid, while independent of the tire, has a continuous pneumatic connection with it.

It is needless to here describe the protective anti-skids for pneumatic or solid tires, attached to the rims by hooks or like systems. These are too well known and, besides, are disappearing.

A NEW FRENCH LIFE PRESERVER.

A life preserver which has been invented by Mr. Allain Redou, employed in the merchant marine service at Havre, is described by Consul John Ball Osborne, stationed at that city, as "possessing marked advantages over the type now in use." This life jacket is designed in form and material like an ordinary vest, and a leather belt is attached to insure its remaining in correct position. The vest is provided with inflatable rubber-lined crowns or "water wings," of the same material as the garment itself, these passing under the arms, sufficiently low not to interfere with the movements of the wearer, and resting on the shoulders. When not in use these wings are deflated and may be kept in place, close to the vest, by means of clips. To each crown or wing is attached a rubber tube with pneumatic valve, which provides for quick inflation by simply blowing in the tube. The apparatus weighs less than 2 pounds and is said to be capable when inflated of sustaining a weight of about 37 pounds of iron—more than twice the sustaining capacity of the ordinary life preserver. Demonstrations have been made in the presence of officials of the port of Havre, the demonstrator being able to put on the vest and adjust and inflate the wings in 1 minute and 27 seconds. This new life preserver is not yet on the market.

ITALY STILL BUILDING DIRIGIBLES.

Notwithstanding the appalling disasters that have overtaken German dirigibles, Italy is reported as still going forward in the construction of these great airships, being convinced from her experiences in the war with Tripoli that they can be made most serviceable in time of need. These new war balloons have some novel features, one of them having a gun platform on the top with a special machine gun for defense against other airships.

The Italians are at the same time devoting a good deal of attention to the best means of destroying the dirigibles of the enemy. Where an airship is built with many compartments a shell can pass through one compartment without seriously damaging the structure as a whole, but it is reported that the Italians have invented a shell of such a character that when it penetrates a balloon a certain oxygen content is released and the mixture of oxygen and hydrogen exploded by the heat of a percussion cap that is raised to a high temperature by the hydrogen, the explosion shattering the entire balloon.

INSCRIPTION SALES.

With a view to investigating the system of "inscription sales" (described in the January INDIA RUBBER WORLD, page 186) a deputation consisting of brokers, merchants and other representatives of the rubber trade, attended the December inscription sales at Antwerp. In the opinion of the Antwerp houses familiar with both markets, this system would not prove effective in London without a close combination of the whole of the London interests and the complete stoppage of all private transactions in rubber. It is a part of the Antwerp system for all rubber to pass through the monthly inscription sales, between which no rubber changes hands.

THE STANDARDIZATION COMMITTEE'S REPORT.

IT will be recalled that at an extraordinary general meeting of the Rubber Growers' Association, held in London on July 21 last, a committee was appointed for the consideration of a project for a more accurate system of the standardization and valuation of plantation rubber. The report of this committee, submitted in December to the council of the association, advocates the introduction of a testing system which would clearly indicate quality to the buyer and value to the seller, further proposing that a central testing station be rented where examinations could be made and certificates of quality issued corresponding to every half ton of rubber delivered; samples of the rubber to be vulcanized under certain standard conditions and tests applied to the vulcanized material, on the basis of which certificates would be issued—these tests to be made, if necessary, within two days of delivery of samples. In conjunction with this testing station the report suggests also the erection of an experimental factory, the principal objects of which would be: To advise regarding the best type of plantation rubber to be used for specific purposes and best method of use; to advise regarding mixings, processes, etc., in respect to which manufacturers may ask for assistance; experimental work, with a view to determining new uses for plantation rubber, and to provide the organization for bringing before the trade the results of work done, new methods and uses, etc.

Among the principal reasons for the appointment of the committee was the known fact that considerable variation occurs in plantation rubber, which has depressed prices. Greater uniformity in preparation would, however, only provide insufficient remedy for this defect, which calls for some guarantee of quality. The committee is of the opinion that most of the other grades on the market could not successfully compete with plantation rubber sold under a guarantee.

The tests decided upon as a basis for the system of valuation were suggested by Dr. Philip Schidrowitz and have been endorsed as practical and scientifically sound by technologists, manufacturers and buyers, it being agreed that a true value and practical standard of quality can be ascertained by determining the vulcanizing capacity and by tests of the vulcanized product determining tensile properties, physical condition and stability. While it is admitted that for different manufacturing purposes rubbers of specific qualities are required, it has further been agreed that general commercial quality can be represented by an index figure covering the three attributes mentioned above, provided that, as is intended, the rate of cure, compared with a certain standard, be also given. The manufacturer will thus be enabled to select the exact grade suited to his purpose.

It is suggested to sub-divide all crude rubbers of various grades on the basis of index figures of quality. For instance, all rubbers showing an index figure of

900	and over	being	1st	grade.
800	to 900	"	2nd	"
700	to 800	"	3rd	"
600	to 700	"	4th	"
500	to 600	"	5th	"

(No. 1,000 would correspond with a plantation rubber of high quality.)

Some little time would necessarily elapse before manufacturers would learn the application of the index figures to practical work, but it is anticipated that no ultimate difficulty would arise under this head.

The report includes an estimate of the investment and annual expenditure required to carry out this scheme, based both on a testing station only and a testing station and factory combined as well as on quantities of 10, 20 and 30 thousand tons, and in all cases is shown as only a very small fraction of a penny per pound on the rubber to be tested. The recommendation is made that a limited liability company be formed with a nominal capital of £50,000 to carry on this work and that the shares in this company be divided among the participating plantation concerns.

The publication of the committee's report marks a distinct advance in the solution of the question of standardization. In accordance with the recommendations of the committee the report has been sent to plantation companies; consequently it rests with them to decide whether they are prepared to guarantee their rubber at a slight expense.

FEDERATED MALAY STATES AND STANDARDIZATION.

In his recent opening address to the Federal Council of the Malay States, Sir Arthur Young, the High Commissioner, referred to the increase in 1913 of the acreage alienated for planting purposes to 83,900 acres, as compared with 61,300 for the corresponding period of 1912. He added: "There is no halt in our progress in spite of the long-expected fall in the price of rubber. . . . It will not be an unmixed evil if it enforces sounder and more economical methods of production. The low price of plantation rubber may also encourage its more extended use, in place of inferior substitutes or poor imitations of the genuine product.

"The necessity of standardizing Pará rubber for export from the Malay States is engaging the attention of the British authorities, who are increasing the chemical staff of the Agricultural Department with a view to the investigations being made as thorough as possible."

RUBBER TESTING AT GROSS LICHTERFELDE.

ACCORDING to the report of the Royal Material Testing Bureau, Gross Lichterfelde, for the business year from April, 1912, to March, 1913, the testing of rubber, which was first undertaken in 1909, was carried on to an increased extent during the year under review. This result was facilitated by the acquisition of a suitable calender for the laboratory and the completion of the previous equipment of washing, mixing and vulcanizing machinery. The bureau is now in a position to make tests of the influence of various conditions of vulcanization on the strength of rubber.

Interviews took place with various officials from the German colonies interested in rubber, and, as requested, a large number of German rubber factories supplied the bureau free with the necessary material for mechanical tests of as many commercial qualities of rubber as possible. The object in view was such alteration or extension of existing processes as might be found necessary.

During the year an increased number of appliances for the testing of balloon materials were used, particularly for diffusion of gas. Other tests were carried out for the description of fiber, strength and resistance to weather, sun light and damp. Others were made of metallized fabrics, as to their weather resisting qualities, resistance to breaking and bursting, and penetrability to gas.

In conjunction with the German Association of Electrical Engineers and representatives of the Insulated Wire Factories, the bureau elaborated new and simplified methods of testing electric wire. The control of the rubber covering of interior wiring was undertaken, in conjunction with the United Insulated Wire Factories. Not only were samples of the finished product tested, but samples were also received for testing India rubber in the mass intended for use in cable covering.

Among the treatises published were those of F. W. Hinrichsen and E. Kindscher on the "Theory of Vulcanization" and "Studies on Rubber Analysis."

Several important rubber factories in Germany and elsewhere were visited by representatives of the bureau. Among these were the Diamond Rubber Co.'s works at Akron.

A GERMAN MANUFACTURER ON RUBBER CONSUMPTION.

ONE of the most interesting features of the recent rubber conference of the Colonial Economic Committee, held at Berlin, was the address of Kommerzienrat L. Hoff on the development of rubber consumption. While no ideas were advanced by Herr Hoff that have not been fairly well canvassed by American manufacturers, still his opinions are of interest, because they show what German manufacturers are discussing; and they carry additional weight by reason of the fact that he is at the head of the Harburg-Vienna Rubber Co. and is also president of the German Rubber Manufacturers' Association.

He began by introducing a statistical table giving the comparison of the world's consumption and production of rubber, with stocks on hand, for the years 1909-1912. These statistics are as follows:

	World's Consumption. Tons	World's Production. Tons	World's Stocks. Tons
1909/10	76,026	76,553	6,998
1910/11	74,082	79,305	12,563
1911/12	99,564	93,669	10,181

These figures show an increased consumption of about one-third in 1911-12, as compared with 1910-11, thus justifying the speaker's prediction made in 1911, that the rubber market would be capable of absorbing the gradually increasing production. In fact, consumption had more than kept pace with output. This result had been achieved in spite of the over-production and consequent depression in the American market for manufactured rubber goods.

RECLAIMED RUBBER.

According to Herr Hoff's estimate the consumption of reclaimed rubber is double that of the natural product. In other words, if the annual consumption of crude rubber be taken as 100,000 tons, that of reclaimed rubber would represent 200,000 tons. Prices of the latter have not given way and those of scrap only to a slight extent; the purchasing capacity of consumers being thus indicated. The question arises, if the existing low prices for rubber continue, whether it will pay to reclaim scrap for present uses. New uses would, however, be probably found for the product recovered from the scrap which would thus accumulate.

RUBBER WEARING APPAREL.

One of the most important outlets for rubber is in the manufacture of wearing apparel, and this branch, in Herr Hoff's opinion, is susceptible of great development. Rubber wearing apparel is no longer a luxury, but a necessity for the health of every individual. As soon as it can be produced at a sufficiently low price, a largely increased demand is assured for it.

RUBBER FOOTWEAR.

The use of rubber footwear, the speaker urged, could be largely extended if the price were reduced to such an extent as to render it an article which every one, rich or poor, would be enabled to wear in the interest of personal health.

RUBBER HEELS AND SOLES.

It has been found that the enormous demand which has grown up during late years for rubber heels is not due alone to the intrinsic merits of the article, but also to the enormous advance in the prices of leather. Should the latter condition be maintained, there is little doubt that shoe manufacturers will soon adopt rubber soles, which in durability will be found to at least equal leather soles.

RUBBER SPONGES.

Another staple article which, in consequence of the advanced price of the natural product, offers a wide field to rubber, is the sponge. The quality of the natural article is going down and it is being produced in constantly diminishing quantities, but is being fully replaced by the rubber sponge. Besides its other advantages, the latter article is easily sterilized, and can be delivered in any degree of hardness or softness which may be desired, as well as in any sizes that may be called for. It is of equal durability with natural sponge and costs about the same price. If it were possible to reduce the cost of rubber sponges, a notable increase might be anticipated in their use.

SPORTING GOODS.

In Herr Hoff's opinion rubber footballs, tennis balls and golf balls could be sold on a much larger scale at the lower prices which cheap rubber would render possible.

FLOORINGS.

An opportunity is afforded for cheap rubber in matting, floor-covering and artificial leather, while rubber mosaic flooring is in a position to compete with tiled flooring, particularly if rubber prices keep low.

PAVING.

Cheap rubber would be ideal for paving purposes, and would afford an outlet for large quantities of waste rubber, besides doing away with noise in locations where quiet is required. It is, moreover, particularly beneficial to horses' hoofs.

OUTDOOR OFFICIALS' APPAREL.

In the course of the meeting a recommendation was adopted calling the attention of the German Imperial Government to the advantages of waterproof clothing for soldiers, sailors, gendarmes and other officials whose duties are likely to expose them to the weather. The recommendation included a statement to the effect that increased production had so reduced the price of rubber that it is now available in the manufacture of soldiers' cloaks, knapsack covers and certain parts of tents, in competition with the materials hitherto employed for those purposes.

ELASTOZON.

Advices from Lindstedt, Gardelegen, Germany, report the registration of the Elastozon Works, Ltd., for the acquisition and exploitation of the patent and other rights of Herr Hans Knoll, with respect to the rubber substitute "Elastozon." The capital equals $9,000.

REORGANIZATION OF A GERMAN RUBBER MANUFACTURING COMPANY.

The firm of Martin Merkel, Hamburg, has been reorganized under the style of the Martin Merkel Asbestos & Rubber Manufacturing Co., Ltd., with a capital equaling $75,000. Its products include steam packings, insulating materials and technical lubricants.

IMPROVEMENT IN RUBBER MATS.

An improvement in rubber mats is reported from Germany, in the form of a mat composed of discs of rubber stamped out with a die and connected by rods of galvanized iron wire. For the purpose of strengthening the mat, discs of vulcan fiber are inserted at intervals. This mat can be easily rolled up and transported whole. Cleaning is effected by a simple washing. The special construction of the mat reduces the wear to a minimum, so that it is claimed to be indestructible. If so desired it can be finished off with brass edges. It is made by Franz Krüger, Kaiserstrasse 33, Saarbrucken, Germany.

RUBBER IN DOG KENNELS.

Rubber has proved such a benefit to humanity that its adoption for the comfort of animals is perhaps a natural consequence. Hence there is possibly nothing unreasonable in the advice of a German publication to rubber goods dealers to watch the requirements of dog kennel proprietors. These requirements include rubber sheeting and mats, as well as items connected with drainage, not to mention rubber clothing for the dogs on rainy days.

RUBBER NOTES FROM JAPAN.

By a Resident Correspondent

RECLAIMED RUBBER IN JAPAN.

OFFICIAL statistics for the years 1911 and 1912 show almost a five-fold increase in the quantity of reclaimed rubber imported by Japan during the later year, the totals having been: 1911, 141,268 pounds, value $23,779; 1912, 663,536 pounds, value $112,490. This increase is attributed to the greater attention paid to reclaimed rubber by Japanese manufacturers since the visit to this country in the spring of 1912 of Mr. Ernest E. Buckleton, general manager of the Northwestern Rubber Co., Litherland, Liverpool, for the purpose of developing relations with our largest companies.

Twenty years ago Japanese rubber manufacturers were unacquainted with the use of old or waste rubber, and this was thrown into rivers and watercourses; but with the increasing number of waste dealers in Japan waste rubber acquired a commercial value, the dealers buying it for 30 or 35 cents per 100 pounds and selling it to manufacturers at $3 to $5 for the same quantity, thus making an enormous profit. Within the last ten years the manufacture of old rubber has become more and more familiar to the rubber goods makers. Its advantages have been, however, chiefly recognized for the production of low grades and its use has continued up to the present in a greater or less proportion in cheaper qualities, the principal exception being its employment for insulation of electric wire. Annual consumption of old rubber is about four million pounds—value $200,000.

As shown by the above statistics, the year 1912 witnessed a marked increase of demand for imported reclaimed rubber, its merits being appreciated for use in superior classes of goods, for which grades alone its price renders it available. It will not answer for common grades, for which the Japanese article is used. Two of the large insulated wire manufacturing companies have tried the latter variety—unsuccessfully—and have returned to the use of imported reclaimed rubber. The outlook for the shipment to Japan of reclaimed rubber is promising, as there are at present no Japanese factories engaged in the work of high grade reclaiming, and the consumption of these grades is not sufficiently large to warrant the installation of works for their production in Japan. The duty on reclaimed rubber is 20 per cent. ad valorem, but efforts are being made to effect a reduction to 10 per cent. It is understood that this subject will engage the attention of the government at the coming diet.

It will be gratifying to note by the following table the United States occupying the leading position for the year 1912 in Japanese imports of Reclaimed Rubber:

	Pounds.	Value.
United States	376,528	$69,953
Great Britain	249,628	37,305
Germany	37,325	5,214
France	55	18
Total	663,536	$112,490

EXPORTS OF JAPANESE RUBBER MANUFACTURES.

The question of exporting Japanese rubber manufactures is receiving attention in connection with prospective augmented imports of reclaimed rubber, by reason of the cheap labor available in Japan. Besides the European and American markets, China offers exceptional opportunities for such trade, which has already been inaugurated by shipments of electric wire and other rubber goods. Owing to its relative proximity to Japan, China is the natural market for the production of this country. Japanese labor, with imported reclaimed rubber, would make a strong combination in competition for the world's trade

JAPANESE CRUDE RUBBER IMPORTS.

The official figures for the first nine months of the years 1911 to 1913 are:

	Pounds.	Value.
1911	1,547,306	$1,177,795
1912	1,431,241	1,097,171
1913	1,964,493	1,377,440

The figures for the first nine months of 1913 for the respective countries of supply were as follows:

	Pounds.	Value.
Straits Settlements	1,111,623	657,396
Great Britain	402,946	378,230
British India	215,212	154,976
United States	136,296	98,245
Dutch India	13,928	8,908
Other countries	84,488	79,685
Total	1,964,493	$1,377,440

HIGHEST AND LOWEST PRICES IN JAPAN, PER POUND, 1913.

(*Converted into American currency.*)

	Highest.		Lowest.	
Upriver Fine Pará	March 27	$1.39	November 7	$1.10
Pará sheet	April 16	1.26	November 4	1.00
Borneo No. 1	April 2	0.88	November 4	0.70

Japan is thus closely following fluctuations in rubber prices, with a view to profiting by the movements of the market.

LARGE EXPORTS OF RUBBER WASTE FROM SCANDINAVIA TO THE UNITED STATES.

A resident of Denmark, who has been long in the rubber reclaiming business and who frequently sends this publication interesting rubber information, has compiled statistics showing the export to all countries, and separately to the United States, of rubber waste from Norway, Sweden and Denmark during the last few years. His figures show that a very large percentage of these exports come to this country, but, large as they are, the figures do not indicate the entire receipts in the United States from this source, as quite a good many of the lots exported to England and Germany later find their way to American ports. The figures are as follows:

In 1912 Norway exported 585,816 pounds of rubber waste, of which 480,568 pounds came direct to the United States. The total exports of rubber waste from Sweden in 1910 and 1911 amounted to 2,987,468 pounds, 1,947,864 pounds coming to the United States. The waste rubber exports from Denmark for the three years 1911-12-13 amounted to 1,966,360 pounds, 544,060 pounds being shipped direct to America. In other words, over 80 per cent. of the shipments from Norway, about 65 per cent. of the exports from Sweden, and nearly 30 per cent. of the exports from Denmark were shipped direct to this country.

AUSTRIAN PRIZE FOR TRUCK TIRE.

The Austrian Ministry of War has offered a prize equaling $10,000 for the construction under prescribed conditions of an elastic tire for motor freight trucks. In addition to the specific attributes of pure rubber it must possess essentially greater durability, or, with equal durability, must have the advantage of a smaller cost of construction; thus reducing the expense of operation. It must, however, not weigh more than the pure rubber tire.

Competitors must send in a model of the tire in natural or reduced size, with drawing and description, to reach the Automobil Versuchs-Abteilung (Automobile Trial Division) VI Gumpendorferstrasse 1, Vienna, Austria, not later than June 30 next.

NETHERLANDS INDIES RUBBER GROWERS' ASSOCIATION.

AT a meeting recently held at the Hague, under the presidency of Mr. A. G. N. Swart, it was decided to establish an "International Association for the Cultivation of Rubber in the Netherlands East Indies."

The following members represent the various countries on the Council:

Great Britain—Arthur Lampard, Herbert Wright, W. Norfolk, Noel Bingley; Belgium—E. Bunge, F. Osterrieth, A. Hallet; France—Jacques Bernard, Charles Engeringh; Germany—C. A. Erhardt; Holland—J. F. de Beaufort, Dr. A. H. Berthout, P. J. J. Jonas Van's Heer Arendskerke, Professor G. Van Iterson, F. Koch, Jr., Jacob Musly, Abraham Müller, Professor F. Van Romburgh, M. Sanders, J. A. Ruys and J. Van Vollenhoven.

The Rubber Growers' Association of London will add four members as soon as the articles of association are definitely agreed upon.

In his opening address Mr. Swart dwelt on the advantages to

A. G. N. SWART.

be anticipated from the co-operation of the various groups engaged in rubber growing in the Dutch Indies. On account of the enormous amount of foreign capital invested, the cultivation of rubber is an international undertaking. The total capital now invested in this cultivation in the Dutch Indies equals about $100,000,000, distributed approximately as follows:

English	$58,000,000
Dutch	17,000,000
Franco-Belgian	16,000,000
American	7,000,000
German	2,000,000
Total	$100,000,000

Mr. Swart likewise emphasized the fact that the rubber plantation industry was about to enter a period when it would have to fight with all its strength against that of collecting wild rubber. The proposed association, he added, would have a vast field of activity in which it could serve both the rubber trade in general and its members in particular. He likewise referred to the question of a demarcation of the rights and duties of free laborers, and to the importance of legislative protection for the members of the association from the appropriation by the natives of the harvested products of the plantations.

Other points claiming the attention of the association were the cost of production and transport of prepared rubber, as well as the reorganization of the present system of the public sale of plantation rubber. In the speaker's opinion, however, the most interesting task before the association would be the search for new outlets, to absorb the increased supplies of rubber coming forward. The solution of this problem would, he added, decide the future of the rubber industry.

While the other planters' associations existing in Europe had exercised beneficent influence upon the cultivation of rubber in the Dutch colonies, they had likewise other interests at heart, not always consonant with those of the planters of the Netherlands East Indies. This fact had led to the establishment of the new association.

INTERNATIONAL AGRICULTURAL CONFERENCE.

The French International Association for Colonial and Tropical Agronomy, in connection with its British Section, has organized an international conference, to be held next June at the Imperial Institute, London.

Papers will be submitted on such subjects as: "Technical Education and Research in Tropical Agriculture," "Scientific Problems of Rubber Production" and "Agricultural Credit Banks."

While arrangements are so far necessarily incomplete, it is anticipated that the conference will prove a most important event, so far as the tropics are concerned. West Africa will be represented, official representatives having already been appointed for Northern and Southern Nigeria, Sierra Leone and the Gold Coast. Owing to the London exhibition taking place during the month of June, the attendance of a large number of rubber experts is looked for at this international conference.

WHAT IS THE MATTER WITH RUBBER?

I see no occasion to blubber,
Whatever the croakers may say;
But what is the matter with Rubber?
Is all I am asking today.

I've questioned first one and then t'other,
But nobody seems to explain;
They look and say, "Ask me another,"
Or something as vague and inane.

I want to be clearly instructed
In matters just wherefore and why;
To know how the thing is conducted
By those who control and supply.

I want to be really enlightened;
The darkness is hateful to me;
It's not that I'm anywise frightened—
Oh, no! it were foolish to be.

But what is the matter with Rubber?
It used to be ever so strong;
And now, says the keen money-grubber,
It's hardly the price of a song.

There must be a reason for all things.
Whenever those things go amiss;
I've dabbled in great and in small things,
But ne'er met a puzzle like this.

I see no occasion to blubber
Whatever the croakers may say;
But what is the matter with Rubber?
Is all I am asking today.

—Fred. Wallis, in the London "Financial Times."

VALLAMBROSA RUBBER CO., LTD.

Reports for the eight months ending November 30, 1913, show yields on the Vallambrosa Estate of 300,000 pounds, and on the Bukit Kraiong Estate of 76,200 pounds. The outputs for the corresponding period of 1912 were, respectively, 284,100 and 47,100 pounds.

Some Rubber Planting Notes.

CEYLON'S CULTIVATED AREA.

IN an interesting article the "Ceylon Observer" has shown the comparative acreage under cultivation in Ceylon in December, 1911, and October, 1913. The results when tabulated are as follows:

	December 1911 Acres	October 1913 Acres
Rubber	215,000	240,500
Tea	395,000	399,500
Cacao	32,000	28,000
Cardamoms	7,300	7,000
Total	649,300	675,000

During the period of 20 months covered by the above returns, the number of properties increased from 2,144 to 2,197.

The acreage under rubber for the five principal districts is shown as follows for 1913:

	Rubber Alone Acres	Rubber and Tea Acres
Kalutara	41,572	10,380
Kelani Valley	38,343	25,177
Ratnapura	22,503	3,712
Kegalla	13,985	2,726
Galle	13,934	4,574
Total	130,337	46,569

Thus in the five principal districts, there is under rubber alone about one-half the total rubber acreage, an additional quantity as shown, of "rubber-cum-tea."

In 1878, it was estimated that the maximum area of Ceylon plantations (then chiefly coffee) had been attained with 275,000 acres. Within 35 years the cultivated area has increased to 1,033,854 acres in its full extent; of which 675,000 acres are under the four principal branches of the plantation industry, as shown in the first of the above tables.

COST OF PLANTATION RUBBER PRODUCTION.

One of the most interesting features of Grenier's "Rubber Annual for 1913" is a comparative calculation of the cost of rubber production at four leading points of the Middle East; supplemented by the freight to Europe and selling charges. These two items constitute the "all in" or inclusive cost delivered in Europe.

The figures are as follows, with their American equivalents:

	Ceylon.	Malaya.	Sumatra.	Java.
Eastern cost, free on board	8d. (16 cents)	1s. (24 cents)	10d. (20 cents)	1s. 2d. (28 cents)
Freight to Europe and sale charges	2½d. (4½ cents)	2½d. (4½ cents)	2½d. (5 cents)	2½d. (5 cents)
Total inclusive cost in London	10½d. (20½ cents)	1s. 2½d. (28½ cents)	12½d. (25 cents)	1s. 4½d. (33 cents)

These figures, it will be recalled, are the actual outlays at the various stages, but include no profits. The freight and sale charges being about uniform, the differences in cost arise from variations at the points of production.

Any profits have to be made on the basis of the above actual costs at the various stages. These figures, it is added, coincide with the general average as estimated by the Akers Commission of a shilling per pound as actual cost of plantation rubber.

THE PROPOSED COLLEGE OF TROPICAL AGRICULTURE.

It will be recalled that the various projects for the establishment of a College of Tropical Agriculture culminated in the formation of a general committee in London, under the presidency of Sir Henry McCallum (late governor of Ceylon). This committee has been endeavoring to obtain the support of the planting and commercial interests in England, and has made such progress that it is hoped to give effect to the project during the course of 1914.

An opportunity of furthering the scheme is afforded by the visit to Ceylon of Professor Wyndham Dunstan, of the Imperial Institute, London, who was to visit that island in January. Professor Dunstan will represent the London committee and will confer with the Ceylon Board of Agriculture as well as the Planters' Association with reference to the college.

LONDON ASIATIC RUBBER AND PRODUCE COMPANY, LTD. (FEDERATED MALAY STATES)

From a cultivated area of 4,342 acres out of its total holdings of 6,747 acres, this company produced in 1913 approximately 1,001,517 pounds of rubber. The total production during 1912 was 706,942 pounds. The price realized in 1913 averaged 3s. 0.59d. per pound, while 468,160 pounds have been sold for 1914 at an average gross price of 2s. 6.54d. per pound.

UNITED SERDANG (SUMATRA) RUBBER PLANTATIONS.

According to the directors' report prepared for submission at the meeting of the above company on December 18 the output had more than doubled in the past business year ending August 31, 1913, having amounted to 1,185,234 pounds, against a total for the preceding annual period of 534,979 pounds. The crop realized an average of 3s. 6.67d. per pound, while the cost including all expenses had been 1s. 7.95d. per pound.

The estimated quantity for the current year is 1,720,000 pounds and the estimated cost is 11.19 pence, free on board, exclusive of depreciation, bonuses to staff and coolie engagement expenses.

Further particulars given show that the total area of the estates is 17,974 acres, of which 9,493½ acres are planted. The crop for the year under report was harvested from an average area of 3,589 acres which had reached the bearing stage.

In addition to an interim dividend of 15 per cent. a final dividend for the year of 20 per cent. was recommended by the directors.

TANDJONG RUBBER CO., LTD. (SUMATRA).

Of the total of 9,733½ acres owned by this company, 4,439 acres are under cultivation, which produced in the last six months of 1913 about 264,822 pounds, against 81,917 pounds for the corresponding period of last year.

PATALING RUBBER ESTATES SYNDICATE, LTD. (FEDERATED MALAY STATES).

This company has a total cultivated area of 2,025 acres, of which 1,422 acres are under cultivation. For 1913 the crop was 484,132 pounds, against 429,547 pounds in 1912.

TAPPING RESULTS IN BRITISH GUIANA.

THE manager of "The Hills" plantation on the Mazaruni River, British Guiana, recently sent a report to the directors of that company resident in this country covering the results of tapping experiments made on *Hevea* trees of various ages on the plantation. His report, in part, reads as follows:

"On May the 13th of this year, we started to tap 32 trees,

NURSERY WITH OVER 60,000 SEEDLINGS. RIVER MAZARUNI AND MANAGER'S HILL IN THE BACKGROUND.

which had reached exactly four years and three months in age, all of which were 18 inches or more in circumference three feet from the ground, and each tree has been tapped with a single V (started at 18 inches from the ground) for the past six months up to the 12th of November. At the commencement of tapping we tapped six days per week, but found that it would be better to tap seven days, as after the rest of 48 hours we always found that we had a reduction in

FIELD OF 2½-YEAR-OLD RUBBER TREES, SHOWING THE COVER CROP OF CREEPERS ON THE GROUND.

the quantity of latex, so that from the end of the second month we have tapped each tree seven days each week."

"Here are the results:

	Biscuits Drams	Scrap Drams	Total Drams
First month.....	739	129	868
Second month.....	950	120	1,070
Third month.....	848	151	999
Fourth month.....	1,280	130	1,410
Fifth month.....	2,017	196	2,213
Sixth month.....	1,982	169	2,151
Total for 6 months	7,816	895	8,711, or 34 lbs. 7 drams

"On the average, during the six months these trees have been tapped, we have produced just over one pound 1 ounce per tree."

AVENUE OF 3-YEAR-OLD RUBBER TREES.

He also gives the rainfall for five years—from September 1, 1908, to August 31, 1913—showing a total rainfall for that time of 515.3 inches, as follows: First year, 110.3 inches; second year, 111 inches; third year, 110.5 inches; fourth year 87.6 inches; fifth year, 95.9 inches.

The total number of wet days during these five years was 1,311, against 515 dry days. Only six times in the five years was there a longer period of dry weather than seven days. During 1911 and 1912 there was a severe drought in the

TREES 4 YEARS AND 9 MONTHS OLD, WITH AN AVERAGE YIELD OF 17 OUNCES OF DRY RUBBER IN 6 MONTHS.

colony, the worst for fifty years, and during that drought there were three dry periods, one of ten days, one of fifteen days and one of eighteen days.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED DECEMBER 2, 1913.

1,079,929. Tire preserving compound. S. R. Ball, Laporte, Ind.
1,079,931. Microphone. J. J. Comer, assignor to Automatic Enunciator Co.—both of Chicago, Ill.
1,079,965. Tire gage. J. F. Waters, Kansas City, Mo.
1,080,004. Wheel for road vehicles. W. D. D. Jones, London, England.
1,080,054. Armor chain for tires. P. Gauthier, Lowell, Mass.
1,080,070. Nursing bottle. L. Mambourg, assignor to The Sanitary Nursing Bottle Co.—both of Columbus, Ohio.
1,080,106. Spring and pneumatic wheel. J. A. Gray, Norwalk, Conn.
1,080,128. Vehicle wheel. J. J. Van Iderstine, Kansas City, Mo.
1,080,129. Spring tire for wheels of vehicles. C. H. Vidal, Chiswick, England.
1,080,136. Sprinkler. J. P. Campbell, Jacksonville, Fla.
1,080,259. Antiskidding attachment for tires. W. E. Budd, Elizabeth, N. J.
1,080,284. Elastic fabric. W. Kops, assignor to Kops Bros.—both of New York.
1,080,295. Tire. J. J. Patton, New York.
1,080,304. Toe spreader. W. M. Scholl, Chicago, Ill.
1,080,337. Demountable rim. L. A. Gordon, Fall River, Mass.
1,080,378. Spring wheel for vehicles. J. F. and H. E. Sipe, New York.
1,080,379. Spring wheel for vehicles. J. F. and H. E. Sipe, New York.
1,080,385. Tire for vehicle wheels. H. L. Stillman, Westerly, R. I.
1,080,394. Tire chain. J. Weaver, Oakland, Neb.
1,080,395. Syringe. A. E. Wilde, New York.
1,080,416. Tire. W. G. Chipley, Atlanta, Ga., assignor to Pneumatic Rim & Tire Co., Wilmington, Del.

Trade Mark.

73,534. U. S. Rubber Co., New Brunswick, N. J. The name *U. S. Rubber Co.* Rubber boots and shoes.

ISSUED DECEMBER 9, 1913.

1,080,534. Suspenders. M. Bono, New York.
1,080,572. Broom attachment embodying a pair of elastic strips. A. McDonald, Central City, S. D.
1,080,580. Automobile wheel rim. O. L. Pickard, Columbus, Ohio.
1,080,592. A playing ball with a core of a soft vulcanized compound of rubber. A. T. Saunders, Akron, Ohio, assignor to A. G. Spalding & Bros., Jersey City, N. J.
1,080,621. Resilient wheel. J. R. Ayotte, assignor to Alexander Airless Auto Wheel Co.—both of Chicago, Ill.
1,080,649. Spring wheel. A. Morgan, Independence, Mo.
1,080,659. Stopper for hot water bottles. C. F. Schuh, Newark, N. J.
1,080,683. Tire shoe making machine. C. A. Edmonds, Akron, Ohio.
1,080,720. Resilient vehicle wheel. L. H. Schoonover, Boise, Idaho.
1,080,770. Adjustable hose holder. W. H. Matthews, Dayton, Ohio.
1,080,814. Rim for mounting pneumatic tires. E. F. Dreger, Oakland, and F. E. Pfister, Piedmont, Cal.
1,080,818. Automobile tire. A. H. Fisher, Lincoln, Neb.
1,080,821. Vehicle tire. C. F. Forster, Oak Park, Ill.
1,080,834. Resilient wheel. W. J. Jones, Martinsville, Va.
1,080,848. Inflatable horse collar. J. F. Pruden, Carnegie, Pa.
1,080,860. Device for building tires on rims. W. C. Stevens, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,080,909. Resilient wheel. R. B. and W. B. Gray, Chicago, Ill.
1,080,923. Grip tread for vehicle tires. C. J. Ohlsson, New York.
1,080,985. Inflatable supporter for trousers and the like. H. Leap, Chicago, Ill.
1,081,005. Cushioning device for tires. J. E. Strong, Wilmington, Del.
1,081,006. Elastic webbing and method of producing same. F. H. Frissell, assignor to Russell Mfg. Co.—both of Middleton, Conn.
1,080,010. Automobile tire. E. Nicklas, Breitung, Marquette, Mich.
1,081,016. Dress shield. F. A. Bush, Oakland, Cal.
1,081,146. Spring wheel. F. W. Pramschufer, Baltimore, Md.
1,081,154. Automobile veil with continuous elastic band. M. Salz, New York.
1,081,192. Wheel for automobiles and other vehicles. O. H. Attridge, assignor of one-fourth to W. N. Cox, one-fourth to C. W. Beale, and one-fourth to F. G. Bennett—all of Montgomery, Ala.
1,081,207. A soft rubber, hollow geographical globe. B. J. S. Cahill, San Francisco, Cal.
1,081,216, Vehicle wheel. S. A. Currin, Bristol, England.
1,081,237. Automobile wheel. J. A. Kolby, L. P. Larsen and C. P. Neilsen, Ephraim, Utah.

Designs.

45,015. Bathing cap. T. W. Miller, Ashland, Ohio.
45,037. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.
45,038. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.

Trade Marks.

64,519. The North British Rubber Co., Ltd., Edinburgh, Scotland. The word *Chick*. Golf balls.
65,455. F. Burgmann, Dresden-Laubegast, Germany. The word *Janos*. Asbestos packing materials for machinery of all kinds.
70,847. Lamont, Corliss & Co., New York. The word *Nugget*, over sparkling stone. Rubber heels for shoes of all kinds.

ISSUED DECEMBER 16, 1913.

1,081,296. Jaw brace composed of soft elastic rubber. A. R. DePass, Columbia, S. C.
1,081,299. Elastic tube splicing device. E. A. Franklin, Austin, Texas.
1,081,336. Tire tool. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
1,081,416. Vehicle wheel. A. R. Weaver, Batesville, Ark.
1,081,425. Cushion tire. Colonel E. Bright, Columbus, Ohio.
1,081,426. Cushion element for resilient tires. Colonel E. Bright, Columbus, Ohio.
1,081,434. Sink stopper consisting of an india rubber device. G. A. Cote, Montreal, Quebec, Canada.
1,081,464. Nipple for nursing bottles. J. Pfeiffer, assignor to Miller Rubber Co.—both of Akron, Ohio.
1,081,468. Drinking cup. H. M. Russell, Jr., Wheeling, Va.
1,081,518. Cushion tire for vehicles. J. Seadler, Sacramento, Cal.
1,081,520. Life preserver. A. Sommerfeld, St. Louis, Mo.
1,081,551. Resilient vehicle wheel. F. A. Pearl, Madison, Wis.
1,081,556. Bottle closure. F. E. Sanders, Chelsea, Mass.
1,081,574. Filtering apparatus for laboratory use. P. A. Boeck, assignor to Norton Co.—both of Worcester, Mass.
1,081,587. Vehicle wheel. P. B. Donahoo, Oakland, Cal.
1,081,613. Vulcanized caoutchouc and process of making same. F. Hofmann and K. Delbruck, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—both of Elberfeld, Germany.
1,081,614. Caoutchouc substance and process of making same. F. Hofmann and K. Delbruck, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—both of Elberfeld, Germany.
1,081,628. Cushion wheel. E. H. Schur, Hibling, Minn.
1,081,648. Shoulder bag water spraying apparatus. D. W. Adams, Glendale Springs, N. C.
1,081,667. Spraying nozzle. H. W. Grann, Bedford Hills, N. Y.
1,081,675. Elastic webbing. W. Kops, assignor to Kops Bros., New York.
1,081,676. Elastic fabric. W. Kops, assignor to Kops Bros., New York.
1,081,688. Combined hose nozzle and lawn sprinkler. C. G. Mohl, Cadillac, Mich.
1,081,694. Automobile tire protector. F. Persic, Minonk, Ill.
1,081,698. Vehicle tire. A. S. Richardson, Jenkintown, Pa.
1,081,745. Nasal inhaler. W. A. Johnston and A. W. Browne, Prince Bay, N. Y., and F. L. Wallace, Lansdowne, Pa., assignors to The S. S. White Dental Mfg. Co., Philadelphia, Pa.
1,081,757. Vehicle wheel. S. T. Kronenberg, Pittsburgh, Pa.
1,081,765. Cushion tire. J. A. Mollitor, Chicago, Ill.
1,081,792. Process of making balloons. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081,793. Apparatus for building or covering balloons. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081,794. Balloon. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081 812. Tire and rim for wheels. J. B. Crawford, Sioux City, Iowa.
1,081,824. Vulcanizing device. H. Giusti, Frankford, Pa.
1,081,844. Spring wheel. A. Laurencich, Washington, D. C.
1,081,846. Pneumatic tire. J. J. Luck, San Antonio, Texas.
1,081,849. Life buoy. M. F. Matlack, Louisville, Ky.
1,081,862. Life saving suit. J. P. Park, Beloit, Kan.

Designs.

45,050. Tire tread. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
45,051. Tire tread. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

ISSUED DECEMBER 23, 1913.

1,082,005. Hose supporter. J. Bellis, St. Paul, Minn.
1,082,029. Heavy car tire. F. W. Kremer, Rutherford, N. J.
1,082,096. Resilient tread. P. W. Pratt, Boston, Mass.
1,082,142. Irrigator. E. Spardel, Hamburg, Germany.
1,082,151. Wheel. J. W. Collinsworth, Leary, Tex.
1,082,182. Device for preventing excessive pressure in pneumatic tires. W. H. Van Winkle, Newark, N. J.
1,082,198. Nursing nipple. E. E. Jencsa, San Francisco, Cal.
1,082,203. Tire tread. D. Marshall, Cheltenham, England.
1,082,258. Vulcanizing device. J. E. Bancroft, Toledo, Ohio, assignor to Toledo Computing Scale Co., Newark, N. J.
1,082,299. Demountable rim. R. W. Ashley and F. Oberkirch, New York.
1,082,309. Concentrator belt comprising an inner surface of rubber belting. R. De Large, Ray, Ariz.

1,082,373. Vulcanizing mold. P. D. Thropp, assignor to The de Laski & Thropp Circular Woven Tire Co.—both of Trenton, N. J.
1,082,375. Weather strip. G. C. Vachon, Chicago, Ill., assignor to City Weather Proofing Co., of Illinois.
1,082,389. Spring wheel. E. R. White, Plattsburg, N. Y.
1,082,453. Resilient tire. C. F. Strohm, Carthage, Mo.

Trade Marks.

72,065. The High Pressure Cellular Rubber Syndicate, Ltd., London, England. The word *Cellasot*. India rubber composition in cellular or spongy form.
73,590. W. P. O'Neil, New York. The word *Kewpie*. Garters.
73,799. United Drug Co., Boston, Mass. The word *Maximum*. Druggists' sundries.
73,800. United Drug Co., Boston, Mass. The word *Monogram*. Druggists' sundries.
73,801. United Drug Co., Boston, Mass. The words *American Beauty*. Druggists' sundries.
74,124. The B. F. Goodrich Co., Akron, Ohio. The word *Hipress*. Footwear.

ISSUED DECEMBER 30, 1913.

1,082,522. Caoutchouc substances and process of making same. F. Hofmann, C. Coutelle, K. Meisenburg and K. Delbruck, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
1,082,600. Resilient wheel. F. W. Leib, Middletown, Ohio.
1,082,643. Life saving suit. T. Matthews, Brooklyn, N. Y.
1,082,637. Cushion tire. N. K. Parrish, Gainesville, Fla.
1,082,660. Inner tire. J. A. Thomson, Allentown, Pa.
1,082,900. Resilient wheel with compressible tread. F. F. Patzman, Kansas City, Mo.
1,082,915. Spring wheel, C. N. Sowden, Guantanamo, Cuba.
1,082,966. Elastic fabric. G. C. Moore, Worcester, Mass.
1,082,983. Tire inflating mechanism. E. J. Watson and R. F. Downey, Milwaukee, Wis.
1,083,000. Cushion tire for vehicle wheels. A. Casazza, Hoboken, N J
1,083,009. Vehicle wheel. F. E. Glasser, New York.
1,083,059. Resilient tire. R. Curry, New York.
1,083,140. Dress shield. H. P. Rindskopf, New York.
1,083,143, Tire. W. L. Ross and A. Leiffer, Bellaire, Ohio.
1,083,164. Producing isoprene. F. Webel, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.
1,083,165. Process of producing isoprene. F. Webel, assignor to Badische Anilin & Soda Fabrik—both of Ludwigshafen-on-the-Rhine, Germany.
1,083,188. Tire filler. D. L. Clark, Birmingham, Ala.
1,083,231. Method for making tires. A. E. Wale, Birmingham, England
1,083,245. Vehicle tire. L. H. Ferguson, Ithaca, N. Y., assignor of one-third to O. W. Wellington, and two-thirds to T. F. Rogers, E. Force and C. G. Andrews, Corning, N. Y.
1,083,264. Sound record. L. H. Baekeland, Yonkers, N. Y., assignor to General Bakelite Co., New York.

Designs.

45,083. Automobile tire. A. J. Allen, Seattle, Wash.
45,090. Rubber vehicle tire. W. C. Hendrie, Los Angeles, Cal.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 3, 1913.]

18,386 (1912). Clincher rim for pneumatic wheel tires. W. J. Bromley, Roxborough, Holyhead Road, Coventry.
*18,410 (1912). Syringes. F. B. Mulgrew, Heraldsburg, Cal., U. S. A.
*18,429 (1912). Block tires. E. H. Koken, Akron, Ohio, U. S. A.
18,492 (1912). Anaesthetic inhaler with pneumatic face piece. E. W. Poole, 54 Poland street, Oxford street, London.
*18,499 (1912). Vulcanizing chambers. A. Adamson, Akron, Ohio, U. S. A.
18,506 (1912). Synthetic caoutchouc. A. Heinemann, 223 North End Road, West Kensington, London.
*18,507 (1912). Elastic covered cleaners for spinning rollers. F. H. McDevitt, Maverick Mills, East Boston, Mass., U. S. A.
18,509 (1912). Channel rim and block tire for vehicle wheels. R. D. Muro, 131 Calzada, Vedado, Havana, Cuba.
18,538 (1912). Tire attachments to rims. G. O. Williams, Pemberton Arms, Burry Port.
*18,584 (1912). Plates with rubber strips for expressing liquids from solids. J. J. Berrigan, 136 North Center street, Orange, N. J., U. S. A.
18,636 (1912). Steering connection for motor vehicles comprising a pneumatic cushion. H. C. Heide, 2 Broad street Buildings, London.
18,795 (1912). The outer cover of a pneumatic tire. R. W. H. Rodney, Orchard street, St. Augustines, Bristol.
18,798 (1912). Breathing apparatus for miners, etc. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.
18,813 (1912). Vehicle wheels. I. Vagnetti, 5 Piazza Donatello, Florence, Italy.
18,814 (1912). Block tires for vehicle wheels. A. Fortini, 17 Via S. Giovasio, Florence, Italy.
18,821 (1912). Parachutes. A. T. Desgardin, 33 Rue de la Gare, St. Brieuc, France.
18,851 (1912). Treating rubber gums. E. S. Cohen, Ali-, 34, Stadhouderslein, The Hague, Holland.
18,853 (1912). Veils with rubber adjusting bands. W. Marler, Brooklyn, Pewley Hill, Guildford.
18,864 (1912). Solid tires or treads for tire covers. Coir Tire Co. and G. D. Rose, Northern Assurance Buildings, Albert Square, Manchester.
18,867 (1912). Balata covered rollers for painting rods and rubber device for removing excess of paint. J. Davie, 19 East street, Manchester.
18,871 (1912). Breathing apparatus. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 10, 1913.]

18,877 (1912). Phonograph diaphragms mounted in a split rubber ring, etc. A. Kazubek, 37 Altboxhagen, Boxhagen Rummelsburg, and P. Burger, 9 Claudiusstrasse, Berlin.
18,880 (1912). Screw stopper particularly applicable to rubber hot water bottles. J. Hill, Blair Lodge, Alexandra Road, Reading.
18,932 (1912). Respirators. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.
*18,936 (1912). Wheel tires. W. Langmuir, 798 Seventh avenue, New York, U. S. A.
18,941 (1912). Toy flying machines. Soc. Syndicat Pour l'Exploitation et la Vente Des Brevets Gorrichon, 7 Rue Saussure, Paris.
*18,968 (1912). A puncture proof device for pneumatic tires. C. R. Terrell, Montesano, Wash., U. S. A.
*18,970 (1912). Non-refillable bottles. F. F. Syracuse and J. E. Jahrans, 346 East 34th street, New York, U. S. A.
*18,979 (1912). Wheel tire tread bands, projections and surfaces. M. C. Overman, 391 West End avenue, New York, U. S. A.
19,029 (1912). Stocking suspenders, straps and bands. L. Harrison, 6 Tamworth Road, Hove, Sussex.
19,034 (1912). Making covers for pneumatic tires, etc. J. W. H. Dew, 8 Laurence Pountney Hill, Cannon street, London, and D. Bridge & Co., Castleton Ironworks, Castleton, Lancashire.
19,050 (1912). Parachutes. Baron A. Augezd, Odkolek, 10, Eliasgasse, Baden, near Vienna.
*19,094 (1912). Moulding wheel tires. M. C. Overman, 250 West 54th street, New York, U. S. A.
19,107 (1912). Medical syringes, etc. T. Holt, 28 Crossfield street, Warrington, Lancashire.
19,115 (1912). Vehicle wheels. F. Greenwood, Cockshutt Farm, Simonstone, Burnley, Lancashire.
19,147 (1912). Reinforcing rubber. F. W. Smith, High street, Christchurch, New Zealand.
19,148 (1912). Jackets and covers for rubber tires. F. W. Smith, High street, Christchurch, New Zealand.
*19,153 (1912). Rubber coated fabrics. L. A. Holmes, Green Island, Troy, and F. L. Bissel, Valcour—both in New York, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 17, 1913.]

19,395 (1912). Aeronauties. G. Notarianni, 19 Bristo Place, Edinburgh.
19,437 (1912). Flexible bags. H. C. Martyn and A. Arbon, 116 Goswell Road, London.
19,513 (1912). Air tubes and chambers. W. Thiemann, 50 Dovenstadterstrasse, Linden, Hanover, and Gummiwerk-Sollnmünchen Akt.-Ges., Solln, near Munich—both in Germany.
19,521 (1912). Detachable rim attachments to wheels. M. Kuller, 24 Durerstrasse, Gross-Lichterfelde, near Berlin.
19,531 (1912). Annular india rubber rings forming elements in buffer or draw springs for railway vehicles. A. G. Spencer, 77 Cannon street, London.
*19,591 (1912). Spring wheels. H. E. Stratton, Empire, Ohio, U. S. A.
19,615 (1912). Treating india rubber trees. Fiskus Des Schutzgebietes Kamerun, 62 Wilhelmstrasse, Berlin.
19,619 (1912). Suspenders. J. Nicholson, 4 Market Place, Whitehaven.
19,629 (1912). Tire attachments to rims. J. R. K. Law, 19 St. Vincent Place, Glasgow.
19,667 (1912). Clutch disks with rubber rings, for quickly starting and stopping gramophones. E. Kramer, 92 Graefestrasse, Berlin.
19,704 (1912). Spring wheels with continuous outer rigid ring and pneumatic rubber ring, and like cushions. A. Roe, 5 Waterloo Square, Anna Valley, Andover, Hampshire.
19,730 (1912). Studs and treads for wheel tires, stairs, etc. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tyre Syndicate, Broad street House, London.
19,750 (1912). Respirators for swimmers. S. Cohen, 120 Newgate street, London.
19,809 (1912). Tire and like inflating valves. G. A. Walmsley, Clifton, Wallace street, Grangemouth, Stirlingshire.
19,831 (1912). Top boot, the lining of which is secured by lacings, buckles, or elastic sides. F. Ward, 108 Melrose avenue, Streatham road, Mitcham, Surrey.
19,832 (1912). Driving belts, conveyor belts, etc. E. J. Rigby, 60 Queensborough Terrace, Bayswater, London.
19,886 (1912). Wearing apparel. D. W. Ogilvie, Gorgona, Canal Zone, Panama.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 24, 1913.]

19,934 (1912). Driving belts. C. H. Gray, India Rubber & Gutta Percha Works, Silvertown, Essex.
19,964 (1912). Tread bands, projections and surfaces. J. C. Moore, Nightingale Hall, Lower Edmonton, London.

20,013 (1912). Stocking suspenders. H. W. Hall, Bassishaw House, Basinghall street, London.

20,024 (1912). Garments or hats of flexible fabric having a rubber tube which may be distended to extend the edges. R. H. Popplestone, 42 Queens Road, Clifton, Bristol.

20,049 (1912). Process and apparatus for coagulating rubber latex by smoking. H. Hawthorne, Sheenhurst, East Sheen, Surrey.

20,087 (1912). Tires of the type comprising an outer cover, an elastic filling and a small air tube adapted to be inflated. H. J. Hardie, 172 Kennedy street, Winnipeg, Canada.

20,097 (1912). Rubber insulation to separate phonograph stylus holder cross bar from sound box. O. Pirl, 16 Südstrasse Böhlitz-Ehrenberg, near Leipzig, Germany.

20,098 (1912). Strengthener for vulcanite dental plates. C. O. Juterbock, 46 Lennard Road, Penge, London.

20,171 (1912). India rubber disc or plates for valves, etc. A. Moller and A. Hartmann, Globus, Gummi & Asbestwerk Ges. Ahrensbok, Germany.

20,172 (1912). A cover for preserving jars comprising an india rubber cap. A. Moller and A. Hartmann, Globus, Gummi & Asbestwerk Ges., Ahrensbok, Germany.

20,181 (1912). Spring wheels with springs between hub and flexible or non-rigid rim. C. Grenon, 5 Olive Ghat sr., Calcutta.

20,194 (1912). Nonmetallic elastic bodies and cores; tire attachments to rims; tread bands, projections and surfaces. T. E. Halliday, Glenesk, Bishopstoke, Hampshire.

20,204 (1912). Cow milkers. L. de Wyttenbach, 20 High Holborn, London.

20,235 (1912). Mud guards carried by wheels, comprising a rubber ring. D. Walker, 49 Prince of Wales Road, and T. Fidkin, 113 Randolph Road—both in Custom House, London,

20,261 (1912). India rubber compositions. E. Lamberty, 40 Eisenzahnstrasse, Wilmersdorf, near Berlin.

20,267 (1912). Indirubin dyes. P. A. Newton, 6 Breams Buildings, Chancery Lane, London. (Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.)

20,309 (1912). Process for strengthening worn tire cover fabric by forcing rubber solution between the layers before retreading. R. Strong, Farnborough, Hampshire.

20,338 (1912). Swimming appliances. H. and P. Starke, 23a Hauptstrasse, Gromwusterwitz, Germany.

20,355 (1912). Jackets and covers for wheel tires. T. D. Kelly, 9 Avenue Road, Southend-on-Sea, Essex.

*20,413 (1912). A rubber composition or like tire. M. M. Weiss, 1902 Treadway avenue, Cleveland, Ohio, U. S. A.

20,496 (1912). Inner or air tubes for pneumatic tires. H. H. Gee, 2 Linden Grove, Sydenham, London.

20,508 (1912). Infants' soothers. A. Teitz, 4 Montrose avenue, West Kilburn, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1913.]

*20,517 (1912). Printers' blankets, comprising a rubber impregnated body portion with covering vulcanized thereto. F. E. Ellis, 33 Crescent avenue, Revere, Mass., U. S. A.

*20,541 (1912). Pneumatic cushioned vehicle wheels. A. Johnston, Great Falls, Mont., U. S. A.

20,558. (1912). Regenerating rubber. G. Reynaud, 5 Rue Salneuve, Paris.

*20,559 (1912). Tread bands for wheel tires. J. Savoie, 33 Fales street, Central Falls, R. I., U. S. A.

*20,664 (1912). Spring wheels for vehicles. V. E. Campbell, R. F. D. No. 2, Box 70, Watsonville, Cal., U. S. A.

20,703 (1912). Billiard table bed with layer of rubber interposed. J. Ashcroft, 37 Victoria street, Liverpool.

20,217 (1912). A protective shield for pneumatic tires. F. G. Chrystal, 463 Corporation Road, Birkenhead, and R. C. Midgley, 16 Buxton Road, Rock Ferry, Cheshire.

20,801 (1912). Machine for reinforcing insoles of boots and shoes by means of a canvas strip coated with rubber solution. Northampton Machinery Company, J. V. Collier and A. W. Edwards, St. Michael's Road, Northampton.

20,815 (1912). Balloons containing explosives for use in aerial warfare. J. H. Hall, 13 Gray's Inn Residences, Clerkenwell Road, London.

20,817 (1912). Rubber strips insulating trumpet of gramophone from cabinet. P. J. Morren, "Merriemead," Blakehall Road, Carshalton, Surrey.

20,872 (1912). Rubber substitute for use chiefly as the inner nucleus of a rubber wound golf ball. W. T. Hill, Greenhill, Rathen Road, Withington, Manchester, and R. Milne, Arnold avenue, Bishopbriggs, Lanarkshire.

21,011 (1912). Air tubes for tires and other rubber or like articles. Motorists' Purchasing Association, and C. C. Macdowell, 170 Piccadilly, London.

21,031 (1912). Tread bands, projections and surfaces for wheel tires. H. Agha, Eagle Lodge, Hale, Cheshire.

21,036 (1912). Spring wheels with continuous outer rigid ring and rubber cushions. A. Sordi, 5 Via Maraini, Lugano, Switzerland.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

459,358. (June 17, 1913). D. Marshall. Improvements in treads for pneumatic or other elastic tires, and in their methods of friction.

459,445 (September 5, 1912). J. Roche and M. Levy. Mud guard for wheels of all vehicles.

459,447 (September 5). G. Reynaud. Process for regenerating used rubber.

459,481 (June 20, 1913). Wale's Invulnerable Tyre Syndicate, Ltd. Tire cover and its mode of manufacture.

459,482 (June 20). Wale's Invulnerable Tyre Syndicate, Ltd. Wheel tire and its mode of manufacture.

459,507 (June 21, 1912). E. Scott. Tread for pneumatic tires.

459,519 (September 6), A. J. Platz. Mud guard.

459,606 (June 24, 1913). H. Kitcher. Improvements in wheel tires.

459,633 (September 10, 1912). A. Cremoun and P. Bieth. Mud guard.

459,693 (June 26, 1913). E. Zapport. Process for regeneration of rubber.

459,793 (June 30). Russian-American India Rubber Company. "Treugolnick." Rubber envelope for tires.

459,794 (June 30). Russian-American India Rubber Company. "Treugolnick." Cover for pneumatic tires with anti-skid projections.

459,795 (June 30). Russian-American India Rubber Company. "Treugolnick." Cover for pneumatic tires.

459,852 (September 17, 1912). A. Honnorat. Elastic chamber.

459,886 (September 18, 1912). G. Reynaud. Process for desulphurization of vulcanized rubber.

459,978 (May 29, 1913). R. B. Stroup. Improvements in rubber footwear.

459,987 (June 13). C. K. F. Gross. Process for manufacture of rubber, starting from synthetic isoprene.

459,988 (June 13). C. K. F. Gross. Process for manufacture of isoprene.

460,069 (July 5). W. E. Muntz. Improvements in the manufacture of covers for pneumatic tires.

460,110 (September 25, 1912). C. J. Braun and E. A. Braun. Mud guard.

460,201 (July 10, 1913). H. E. Spelshouse. Improvements in wheel tires.

460,207 (July 10). T. Unsworth. Improvements in the construction of pneumatic wheels.

460,242 (July 11). H. Webb. Presses for the manufacture of articles composed of rubber or like substances.

460,243 (July 11). J. T. Szek. Process of manufacture of armed hard rubber.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

268,345, Class 30d (September 3, 1912). Ear protecting appliance consisting of an adjustable hollow piece of rubber, inserted in the organs of hearing. Dr. Hans Hasselbeck, Mannheim, and T. A. Weisser, Heidelberg.

268,387, Class 39b (December 25, 1912). Process for the production of a vulcanized rubber. Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen.

268,630, Class 39b (July 30, 1912). Process of obtaining rubber or rubber-like masses. C. E. Anquetil, Marseilles.

268,584, Class 47i (March 9, 1911). Extensible packing ring. Aktiebolaget de Lavals Angturbin, Järla near Stockholm.

268,843, Class 39b (December 24, 1912). Process for regeneration of vulcanized rubber waste. Dr. Hugo Hutz, Frankfort, a. M.

268,947, Class 39b (February 21, 1913). Manufacture of a product resembling hard rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.

268,917, Class 63c (September 29, 1911). Improvements in hollow rubber tires. Giles Sheldon Doty and John D. Show, Philadelphia.

268,954, Class 63e (November 27, 1912). Protective cover for pneumatic tires. Hercules Pneumatik Werke, Bremen.

268,956, Class 63c (July 23, 1912). Rubber tires with fabric insertion. Karl Landgrebe, Dresden.

268,957, Class 63c (December 28, 1912). Manufacture of pneumatic tire covers. Ernest Clark and C. N. J. Winter-Irving, London.

THE KINGDOM OF BELGIUM.

PATENT PUBLISHED.

260,457 (November, 1913). Anti-skid appliance for rubber tires. J. Sternegger, Rabistrasse 39, Munich.

BREATHING EXERCISES TO BE SCIENTIFICALLY CONDUCTED.

An apparatus has been devised in France whereby breathing exercises may be conducted on a systematic and progressive scale, and without danger to weak lungs. A bottle marked with a graduated scale and of known capacity, is filled with water and placed in an inverted position in a vessel which also contains water, the liquid being retained in the bottle by reason of the atmospheric pressure. A rubber tube extending from the neck of the bottle is held in the mouth of the patient, who inhales through the nose, in the regular manner, and exhales through this tube, the air from the tube displacing the water in the bottle by degrees, the displacement being shown by the graduated scale and accurately measuring the extent of the exercise. The apparatus is intended for use in the open air or a well ventilated room, and the exercises are to be continued until all the water in the bottle has been displaced by air.

Review of the Crude Rubber Market.

THE principal feature of the London market for fine Pará during January was the continued absence of important fluctuations. Prices only slightly varied within the limits which have prevailed since October, of 3s. 1d. to 3s. 2d.; the higher figure having been attained on the 23rd and the lower on the 8th.

During the last days of December prices were steady, the absence of any pressure of supplies, owing to the holidays, contributing to this situation. Stocks in manufacturers' hands were reputed to be small, but there was no inclination to anticipate future requirements.

Attention has been directed to the fact that the landings in England of Pará rubber for the last six months of 1913 were 5,790 tons, and the deliveries 6,716 tons; a decrease in available supplies being thus indicated. Continental returns were of a similar character, imports having been 1,870 tons and deliveries 1,950 tons.

In accordance with the recent decrees, the 20 per cent. Brazilian export duty on rubber from the Acre territory has been reduced by one-tenth.

Whether to their advantage or otherwise, there is no doubt that the fortnightly auctions afford a steady outlet for the production of the rubber planting industry. During 1913, 23,500 tons have passed through the London sales. That the new year has opened in a manner satisfactory to plantations interests, is indicated by two January auctions having included about 2,000 tons. The first sale, which had commenced December 31, comprised 925 tons. While it opened quietly, it gradually improved; finally showing an advance equaling 1d. on prices of last auction, and the lower grades of crêpe being 1d. to 2d. per pound higher.

The second sale of the new year was held on January 14 and 15, being the largest one for some time, and including 1,114 tons. Of this quantity, 856 tons came from the Straits and 258 from Ceylon. Demand was good throughout, a farthing advance being recorded on the second day.

Forward sales of plantation rubber have been made, delivery ranging from February to December at 2s. 3¼d.

In the open market prices fell in the closing days of December from the level of 2s. 3¼d. established on 23rd, to 2s. 2¾d. on the 30th. The quotation returned to 2s. 3¼d. on January 2, reaching 2s. 3¾d. on 6th. It then receded to 2s. 3d. on the 8th, touching 2s. 3¼d. on the 9th and falling to 2s. 2¾d. on the 10th and 12th. From the 13th to the 21st it fluctuated between 2s. 3d. and 2s. 3¼d. On the 22nd it improved to 2s. 4¼d., and on the 23rd to 2s. 4¾d.

Comparative prices of Pará and plantation rubber during the last six months include the following fluctuations at certain dates:

		Pará.	Plantation.
1913	July 26	3s. 7d.	2s. 9½d.
	August 27	3s. 9½d.	2s. 8d.
	September 25	3s. 7½d.	2s. 4d.
	October 27	3s. 1½d.	2s. 2d.
	November 22	3s. 2d.	2s. 4¼d.
	December 23	3s. 1¼d.	2s. 3¼d.
1914	January 23	3s. 2d.	2s. 4¾d.

Thus during the last four months fluctuations have been of small extent.

The Amsterdam inscription sale of January 7 included about 54 tons *Hevea* and 7 tons *Ficus*. With the exception of a few small lots the whole of the quantity offered was sold at very favorable prices. *Hevea* realized on an average 7½ per cent. above the valuations and *Ficus* 7 per cent.

An inscription sale was announced to take place at Havre on January 23 of 51 tons, principally from the French Congo, with a small quantity from Sumatra.

For January 21, an inscription sale was scheduled to be held at Antwerp, including 55 tons Congos and 130 tons plantation.

Antwerp statistics for 1913 show:

		Tons.
Stock December 31, 1912		510
Arrivals 1913, Congos	2,886	
Sundries	121	
Plantation	2,033	5,040
		5,550
Sales in 1913		4,991
Stock December 31, 1913		559

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and January 30—the current date:

PARA.	Feb. 1,'13.	Jan. 1,'14.	Jan.30,14.
Islands, fine, new	98@ 99	60 @61	64@65
Islands, fine, old	.....	.....	.....
Upriver, fine, new	104@105	73 @74	75@76
Upriver, fine, old	.....	76 @79	77@80
Islands, coarse, new	51@ 52	28 @29	.28@29
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	79@ 80	44½@45	44@45
Upriver, coarse, old	.....	.....	.....
Cametá	51@ 52	36 @37	34@35
Caucho (Peruvian) ball	78@ 79	44 @45	46@47
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	109@110	60 @61	62@64
Fine pale crepe	104@105	56 @57	61@62
Fine sheets and biscuits	103@104	56 @57	60@61
CENTRALS.			
Esmeralda, sausage	77@ 78	39 @40	38@39
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	76@ 77	38 @39	36@38
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	75@ 76	35 @39	35@37
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	60@ ..	35 @..	35@36
Balata, sheet	85@ 86	.....	.....
Balata, block	55@ 56	45 @50	45@50
AFRICAN.			
Lopori, ball, prime	.....	44 @48	53@54
Lopori, strip, prime	.....	.....	.....
Aruwimi	.....	.....	.....
Upper Congo, ball red	.....	.....	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	95@ 96	.....	.....
Massai, red	96@ 97	.....	50@52
Soudan Niggers	92@ 93	.....	48@52
Cameroon, ball	75@ 76	28 @31	31@34
Benguela	73@ 74	.....	.....
Madagascar, pinky	.....	.....	.....
Accra, flake	25@ 26	22 @23	20@21
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	7@7⅛	.....	6@6½
Borneo	.....	.....	.....

STATISTICS, PARA INDIA RUBBER (IN TONS) (INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF DECEMBER.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	3,150	440 =	3,590	against	4,920	3,830	2,640
Shipments to Liverpool	1,080	210 =	1,290	"	1,670	1,290	1,410
Shipments to Continental Ports	400	70 =	470	"	550	350	360
Shipments to America	1,660	160 =	1,820	"	2,210	2,670	1,340
American Imports	1,110	90 =	1,200	"	1,990	1,790	1,470
American Deliveries	1,130	150 =	1,280	"	1,800	1,770	1,450
Liverpool Imports	1,310	190 =	1,500	"	1,471	1,362	1,723
Liverpool Deliveries	1,030	165 =	1,195	"	1,541	1,682	1,676
Continental Imports	550	180 =	730	"	350	350	300
Continental Deliveries	520	100 =	620	"	350	460	330

VISIBLE SUPPLY—1st JANUARY, 1914.

	1914. Pará.	1914. Caucho.	1913.	1912.	1911.
Stock in England, Pará, 1st hands	570	.....	250	1,680	2,405
Pará, 2nd hands	130	.....			288
Caucho	.....	235	90	150	349
Stock in Pará, 1st hands	250	60	400	110	560
2nd hands	610	90	410	230	210
Syndicate	810	.....	800	2,240	.....
Stock in America	160	30	350	310	270
Stock on Continent	50	120	20	70	60
Afloat—Europe	550	170	1,800	830	1,280
Afloat—America	480	60	1,450	1,430	430
	3,610	765			
Total Visible Supply, including Caucho.	4,375		5,570	7,050	5,852

CROP STATISTICS—30TH JUNE, 31ST DECEMBER, 1913.

				1913.	1912.	1911.	1910.
Pará Receipts	1913	13,850	2,630	16,480	19,060	16,010	15,780
	1912	16,390	2,670				
Pará Shipments to Europe	6,900		1,630	8,530	10,310	8,490	8,670
Pará Shipments to America	6,690		1,140	7,830	10,300	9,460	6,850
England Landings, net				5,790	6,903	6,251	6,344
England Deliveries, net				6,670	7,933	9,521	6,515
America Landings, net				7,880	9,330	10,095	6,780
America Deliveries, net				7,870	9,150	9,685	6,650
Continental Imports, net				1,850	2,160	1,430	1,380
Continental Deliveries, net				1,930	2,240	1,470	1,370

POSITION—1st JANUARY, 1914.

Decrease in Receipts during December, 1913, against December, 1912.	1,330
Decrease in Receipts—Crop, July/December, 1913, against 1912	*2,580
Decrease in Deliveries—Crop, July/December, 1913, England and Continent, against 1912	1,573
Decrease in Deliveries—Crop, July/December, 1913, America, against 1912	1,280
Decrease in Visible Supply Pará Grades, against 1st January last year	1,195
Increase in Stock, England, December 31, 1913, against December 31, 1912	595

WM. WRIGHT & CO.

London, 2nd January, 1914.

During the month 40 tons Caucho have been shipped from Europe to America.

*A decrease of 2,540 tons Rubber, and 40 tons Caucho.

Amsterdam.

JOOSTEN & JANSSEN report [January 7]:

Today's inscription sale displayed a firm tendency, and its result may be considered as very satisfactory. Next sale will take place on February 5.

Rotterdam.

HAVELAAR & DE VRIES report [January 17]:

Yesterday's sale was very animated, the whole quantity (24 tons *Hevea* and 10 tons *Ficus*) finding buyers at foreign parity. *Ficus* lots of fine quality met with a splendid sale.

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "After the first week in January the demand for paper increased rapidly, banks in the city and out of town being in the market, some for large amounts. Rates eased off accordingly, and the last half of the month were quoted at 5 per cent. for the best rubber names, and 5½ per cent. for those not so well known."

SUMMARY OF NEW YORK RUBBER PRICES FOR 1913.

	Upriver Fine.	Upriver Coarse.	Islands Fine.	Islands Coarse.	Cameta.
January	$1.02@1.09	$0.78@0.84	$0.97@1.01	$0.52@0.58	$0.52@0.60
February	.96@1.03	.72@ .78	.92@ .97	.47@ .51	.48@ .51
March	.88@ .96	.64@ .72	.85@ .92	.41@ .47	.43@ .48
April	.78@ .89	.54@ .66	.76@ .85	.37@ .41	.39@ .45
May	.81@ .92	.54@ .61	.78@ .83	.38@ .42	.42@ .45
June	.87@ .92	.54@ .62	.82@ .85	.33@ .39	.40@ .43
July	.84@ .92	.51@ .56	.74@ .81	.29@ .34	.37@ .40
August	.84@ .94	.51@ .53	.74@ .81	.29@ .33	.38@ .41
September	.80@ .90	.48@ .52	.71@ .77	.28@ .31	.36@ .39
October	.73@ .83	.47@ .49	.67@ .72	.28@ .29	.36@ .38
November	.73@ .80	.46@ .49	.66@ .70	.28@ .30	.36@ .37
December	.72@ .76	.44@ .47	.59@ .66	.27@ .30	.35@ .37
AVERAGE PRICES.					
1913	$0.87½	$0.58	$0.79½	$0.36¾	$0.42
1912	1.11¾	.89½	1.05½	.59	.63¾
1911	1.18¼	.95	1.10¼	.64	.70½
1910	2.01¼	1.36¼	1.89¾	.90	1.00
1909	1.59¾	1.07	1.49¾	.66¼	.77
1908	.93¼	.67½	.88¼	.47½	.52

NEW YORK PRICES FOR DECEMBER (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$0.72@0.76	$1.06@1.12	$1.04@1.07
Upriver, coarse	.44@ .47	.82@ .85	.90@ .93
Islands, fine	.59@ .66	.96@1.02	.95@1.01
Islands, coarse	.27@ .30	.54@ .58	.60@ .64
Cametá	.35@ .37	.56@ .60	.60@ .65

NEW YORK PRICES FOR 1913.

	Ribbed Smoked Ceylon. Lowest.	Ribbed Smoked Ceylon. Highest.	First Latex Ceylon. Lowest.	First Latex Ceylon. Highest.
January	$1.05	$1.14	$1.03	$1.12
February	.99	1.05	.96	1.03
March	.90	.98	.91	.96
April	.78	.89	.78	.90
May	.80	.87	.77	.86
June	.71	.80	.68	.77
July	.68	.71	.67	.69
August	.69	.71	.64	.69
September	.57	.67	.51	.64
October	.59	.63	.51	.54
November	.59	.66	.52	.61
December	.58	.62	.53	.56

IMPORTATIONS OF RUBBER INTO THE UNITED STATES.

	1910.	1911.	1912.	1913.
Fine Pará...*tons*	10,274	10,818	13,185	10,072
Coarse Pará	4,622	5,074	6,056	5,257
Plantation Ceylon	3,611	6,556	15,003	23,967
Centrals and Caucho	4,636	4,316	6,469	5,022
East India and Africa	9,773	8,324	9,338	4,406
Total	32,916	35,088	50,051	48,724

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	Jan. 30, '14.
Old rubber boots and shoes—domestic	7⅛@ 7¼
Old rubber boots and shoes—foreign	7⅛@ 7¼
Pneumatic bicycle tires	4½@ 4¾
Automobile tires	5 @ 5⅛
Solid rubber wagon and carriage tires	5¼@ 5½
White trimmed rubber	10 @10¼
Heavy black rubber	3¾@ 4
Air brake hose	3½@ 4
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	5½@ 5¾
Foreign auto tires	5 @ 5⅛

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

DECEMBER 26.—By the steamer *Stephen*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	134,000	36,100	100,400	13,400=	283,900
General Rubber Co.	104,900	19,600	77,800	800=	203,100
Meyer & Brown	70,000	6,900	71,300	9,400=	157,600
Henderson & Korn	77,800	13,500	74,000	19,800=	185,100
H. A. Astlett & Co.	18,000	1,100	23,100	14,400=	56,600
G. Amsinck & Co.	1,800	1,300	800	1,000=	4,900
Total	406,500	78,500	347,400	58,800=	891,200

JANUARY 6.—By the steamer *Gregory*, from Pará, Manáos and Iquitos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	198,000	32,700	88,800	31,500=	351,000
General Rubber Co.	142,400	12,400	40,800	300=	195,900
Meyer & Brown	100,700	9,500	81,200	68,000=	259,400
Henderson & Korn	51,500	11,400	76,700	8,400=	148,000
H. A. Astlett & Co.	22,600	.....	27,900	21,500=	72,000
American Export Co.	10,800	.....	.....	.....=	10,800
Johnstone, Whitworth & Co.	.....	.....	6,400	12,800=	19,200
F. Probst & Co.	.....	.....	.....	2,700=	2,700
Henderson & Korn	32,600	.....	.....	.....=	32,600
Robinson & Co.	22,500	.....	.....	.....=	22,500
Total	581,100	66,000	321,800	145,200=	1,114,100

JANUARY 17.—By the steamer *Basil* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	24,700	16,800	123,700	.....=	165,200
General Rubber Co.	106,300	26,500	22,000	400=	155,200
Meyer & Brown	23,400	6,200	77,500	91,700=	198,800
Henderson & Korn	43,500	9,200	37,600	5,400=	95,700
H. A. Astlett & Co.	6,400	5,400	29,300	.....=	41,100
Johnstone, Whitworth & Co.	13,200	.....	.....	.....=	13,200
Ed. Maurer	.....	.....	11,200	.....=	11,200
G. Amsinck & Co.	5,000	.....	.....	2,800=	7,800
W. R. Grace & Co.	.....	.....	.....	28,300=	28,300
American Export Co.	11,100	.....	.....	.....=	11,100
Robinson & Co.	18,000	300	2,600	.....=	20,900
Total	251,600	64,400	303,900	128,600=	748,500

PARA RUBBER VIA EUROPE.

POUNDS.

DECEMBER 26.—By the *President Grant*=Hamburg:
Henderson & Korn (Coarse) 55,000

DECEMBER 30.—By the *Finland*=Antwerp:
Rubber Trading Co. (Fine) 2,200

January 5.—By the *Carmania*=Liverpool:
Arnold & Zeiss (Fine) 9,000
Raw Products Co. (Fine) 4,500 13,500

JANUARY 10.—By the *President Lincoln*=Hamburg:
Henderson & Korn (Fine) 22,500
Various (Fine) 6,500 29,000

January 10.—By the *Baltic*=Liverpool:
Arnold & Zeiss (Fine) 2,500
Raw Products Co (Fine) 11,200
Raw Products Co. (Coarse) 5,000 18,700

JANUARY 19.—By the *Caronia*=Liverpool:
Henderson & Korn (Coarse) .. 25,000
Raw Products Co. (Coarse) 16,500
Raw Products Co. (Fine) 16,500
Arnold & Zeiss (Coarse) 7,000
Johnstone, Whitmore & Co. (Fine) 7,000 72,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

DECEMBER 22.—By the *Mandeville*=Belize:
Eggers & Heinlein 600
West Coast Rubber Co. 2,000 2,600

DECEMBER 23.—By the *Pastores*=Port Limon:
Isaac Brandon & Bros. 600

DECEMBER 23.—By the *Carl Schurz*=Colombia:
G. Amsinck & Co. 2,000
Mecke & Co. 1,000
Pottberg, Ebeling & Co. 2,000 5,000

DECEMBER 23.—By the *Seguranca*=Mexico:
American Trading Co. 3,000
Laurence Johnson & Co. 2,500
Maldonado & Co. 500
G. Amsinck & Co. 200
American Trading Co. 300 6,500

DECEMBER 26.—By the *Metapan*=Colombia:
R. del Castillo & Co. 1,500

DECEMBER 27.—By the *Morro Castle*=Mexico:
E. Steiger & Co. 1,200
Mecke & Co. 300 1,500

DECEMBER 29.—By the *Pennsylvania*=Mexico:
Marquardt & Co. 1,200
Harburger & Stack 100 1,300

DECEMBER 29.—By the *Colon*=Colon:
Mecke & Co. 700
Wessels, Kulenkampff & Co. 200
W. R. Grace & Co. 700 1,600

DECEMBER 29.—By the *Albingia*=Cartagena:
Mecke & Co. 4,000
G. Amsinck & Co. 2,200
A. Held 800
Various 1,000 8,000

DECEMBER 31.—By the *Prinz August Wilhelm*=Colon:
Gravenhorst & Co. 300
A. L. Moreno 200 500

DECEMBER 31.—By the *Danube*=Colon:
Muller, Schall Co. 6,500

JANUARY 3.—By the *Esperanza*=Mexico:
Meyer & Brown 2,000
E. Steiger & Co. 3,000
Gen. Export & Commission Co.. 600
Harburger & Stack 300
Hermann Kluge 200 6,100

JANUARY 5.—By the *Vasari*=Bahia:
Adolph Hirsch & Co. 12,500

JANUARY 6.—By the *Suriname*=Belize:
Rosenthal & Sons 1,200
Eggers & Heinlein 1,000 2,200

JANUARY 6.—By the *Prinz Sigismund*=Colombia:
Kunhardt & Co. 2,500

JANUARY 7.—By the *Advance*=Colon:
G. Amsinck & Co. 4,700

JANUARY 7.—By the *Emil L. Boas*=Colombia:
Eggers & Heinlein 1,000

JANUARY 10.—By the *President Lincoln*=Hamburg:
Rubber & Guayule Agency, Inc. 5,000

JANUARY 12.—By the *Panama*=Colon:
G. Amsinck & Co. 8,000
Andean Trading Co. 2,500
Piza, Nephews & Co. 2,500
Mecke & Co. 700 13,700

JANUARY 14.—By the *Prinz Joachim*=Port Simon:
Gravenhorst & Co. 300

JANUARY 15.—By the *Tagus*=Colon:
A. M. Capen's Sons 4,500
J. S. Sembrada & Co. 2,500
Gravenhorst & Co. 1,000
G. Amsinck & Co. 500 8,500

JANUARY 16.—By the *Titian*=Bahia:
Various 5,000

JANUARY 17.—By the *Monterey*=Mexico:
E. Steiger & Co. 7,500
Hermann Kluge 3,000
D. C. Andrews & Co. 1,500 12,000

JANUARY 20.—By the *Prince Eitel Frederick*=Colombia:
Various 2,000

JANUARY 21.—By the *Carl Schurz*=Colon:
G. Amsinck & Co. 12,000
Wessels, Kulenkampff & Co. 2,500
De Lima Cortissoz & Co. 600
Harburger & Stack 200 15,300

JANUARY 21.—By the *Pastores*=Port Limon:
G. Amsinck & Co. 800

AFRICAN.

DECEMBER 22.—By the *Amerika*=Hamburg:
Meyer & Brown 13,500
Arnold & Zeiss 18,000
Ed. Maurer 13,500
Rubber & Guayule Agency, Inc. 3,000
Various 45,000 93,000

DECEMBER 22.—By the *Pretoria*=Hamburg:
Arnold & Zeiss 35,000
Henderson & Korn 11,200
Johnstone, Whitworth & Co. 8,500 49,700

DECEMBER 23.—By the *Canadian*=Liverpool:
Arnold & Zeiss 18,000
Various 4,500 22,500

DECEMBER 24.—By the *Honduras*=Havre:
Meyer & Brown 49,000
Arnold & Zeiss 11,200
Various 15,500 75,700

DECEMBER 26.—By the *President Grant*=Hamburg:
Rubber & Guayule Agency, Inc. 12,500

DECEMBER 27.—By the *Cedric*=Liverpool:
Johnstone, Whitworth & Co. 6,700
Various 22,500 29,200

DECEMBER 29.—By the *Campania*=Liverpool:
Raw Products Co. 37,000

DECEMBER 30.—By the *Finland*=Antwerp:
Meyer & Brown 15,500

JANUARY 2.—By the *New York*=Southampton:
Meyer & Brown 7,000
W. Stiles 2,000 9,000

JANUARY 2.—By the *Pennsylvania*=Hamburg:
Arnold & Zeiss 6,000
Charles T. Wilson 2,200
Various 11,000 19,200

JANUARY 5.—By the *Carmania*=Liverpool:
Various 4,000

JANUARY 6.—By the *Caroline*=Havre:
Arnold & Zeiss 75,000

JANUARY 10.—By the *President Lincoln*=Hamburg:
Meyer & Brown 17,000
Arnold & Zeiss 8,000
Rubber & Guayule Agency, Inc. 27,500
Ed. Maurer 40,000
Various 12,000 104,500

JANUARY 10.—By the *Baltic*=Liverpool:
Robinson & Co. 2,000
Raw Products Co. 4,000 6,000

JANUARY 13.—By the *Lapland*=Antwerp:
Various 5,000

JANUARY 15.—By the *Oceanic*=Southampton:
Arnold & Zeiss 35,000

JANUARY 19.—By the *Caronia*=Liverpool:
General Rubber Co. 2,500
Robinson & Co. 4,500
Various 2,000 9,000

JANUARY 21.—By the *Vaderland*=Antwerp:
Robert Badenhop 17,000
Various 16,500 33,500

JANUARY 21.—By the *Niagara*=Havre:
Arnold & Zeiss 10,000

JANUARY 21.—By the *St. Laurent*=Havre:
Arnold & Zeiss 11,200

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

DECEMBER 22.—By the *Minnetonka*=London:
Meyer & Brown *41,000
Rubber & Guayule Agency, Inc. *3,500
L. Blitz *3,500
Rubber Trading Co. *7,500
Raw Products Co. *1,500
De Lagotellerie *2,000
Malaysian Rubber Co. *15,000
Johnstone, Whitworth & Co. *45,000
Western Electric Co. *33,500
W. Stiles *2,200
Ed. Maurer *18,500
Arnold & Zeiss *33,500
Charles T. Wilson *110,000
General Rubber Co. *60,000
Various *195,000 *571,700

DECEMBER 22.—By the *Amerika*=Hamburg:
Rubber & Guayule Agency, Inc. *4,500

DECEMBER 22.—By the *Pretoria*=Hamburg:
Arnold & Zeiss *7,500
Robert Badenhop *2,200
Various *80,000 *89,700

DECEMBER 22.—By the *Rotterdam*=Amsterdam:
Robert Badenhop *3,500
Robinson & Co. *2,200 *5,700

DECEMBER 23.—By the *Kroonland*=Antwerp:
Meyer & Brown *18,500

DECEMBER 24.—By the *Kioto*=Colombo:
Meyer & Brown *43,500
W. R. Grace & Co. *35,000
Ed. Maurer *25,000
Various *17,000 *120,500

DECEMBER 26.—By the *Majestic*=Southampton:
Meyer & Brown *6,000
W. Stiles *7,000
Ed. Maurer *1,100
A. W. Brunn *1,500
Arnold & Zeiss *50,000
Henderson & Korn *40,000 *105,600

DECEMBER 26.—By the *Montrose*=Singapore:
Ed. Maurer *11,200

Henderson & Korn	*22,500	
Various	*5,600	*39,300
DECEMBER 26.—By the *President Grant*=Hamburg:		
Rubber & Guayule Agency, Inc.	*6,700	
Various	*9,000	*15,700
DECEMBER 27.—By the *Philadelphia*=Southampton:		
Meyer & Brown	*31,000	
Arnold & Zeiss	*41,000	
W. R. Grace & Co.	*26,000	
W. Stiles	*7,500	
Ed. Maurer	*33,500	
Various	*47,000	*186,000
DECEMBER 29.—By the *Mesaba*=London:		
Meyer & Brown	*32,000	
General Rubber Co.	*160,000	
Henderson & Korn	*11,200	
Adolph Hirsch & Co.	*46,000	
Johnstone, Whitworth & Co.	*7,500	
Charles T. Wilson	*6,800	
Various	*30,500	*294,000
DECEMBER 30.—By the *Finland*=Antwerp:		
Meyer & Brown	*131,500	
Arnold & Zeiss	*45,000	
Robinson & Co.	*12,500	
Various	*16,000	*205,000
DECEMBER 31.—By the *Marienfels*=Colombo:		
Meyer & Brown	*50,000	
Ed. Maurer	*16,000	
Various	*14,000	*80,000
DECEMBER 31.—By the *Potsdam*=Amsterdam:		
Manhattan Rubber Mfg. Co.	*8,000	
Henderson & Korn	*2,500	
Robinson & Co.	*3,500	
Various	*35,000	*49,000
JANUARY 2.—By the *Minneapolis*=London:		
Johnstone, Whitworth & Co.	*60,000	
Charles T. Wilson	*75,000	
General Rubber Co.	*155,000	
Malaysian Rubber Co.	*11,200	
Rubber Trading Co.	*11,200	
Ed. Maurer	*11,200	
Adolph Hirsch & Co.	*4,000	
Various	*10,500	*338,100
JANUARY 2.—By the *New York*=Southampton:		
Meyer & Brown	*27,500	
Robinson & Co.	*40,000	
Henderson & Korn	*17,500	
Arnold & Zeiss	*11,200	
W. Stiles	*6,000	
L. Blitz	*4,000	*106,200
JANUARY 2.—By the *Pennsylvania*=Hamburg:		
Arnold & Zeiss	*8,000	
Charles T. Wilson	*22,500	
Rubber & Guayule Agency, Inc.	*20,000	
Various	*13,500	*64,000
JANUARY 3.—By the *Kazembe*=Colombo:		
W. R. Grace & Co.	*33,500	
Ed. Maurer	*22,500	
H. W. Peabody & Co.	*5,600	
Various	11,200	*72,800
JANUARY 8.—By the *Westerdyk*=Amsterdam:		
Robert Badenhop	*4,500	
Various	*14,000	*18,500
JANUARY 8.—By the *St. Paul*=Southampton:		
Charles T. Wilson & Co.	*40,000	
W. R. Grace & Co.	*3,000	
Robinson & Co.	*6,000	
Ed. Maurer	*11,200	
Various	*12,500	*72,700
JANUARY 9.—By the *Samland*=Antwerp:		
Meyer & Brown	*105,000	
Arnold & Zeiss	*56,000	
Malaysian Rubber Co.	*22,500	
Rubber & Guayule Agency, Inc.	*5,500	*189,000
JANUARY 10.—By the *Lindenfels*=Colombo:		
Meyer & Brown	*37,500	
Ed. Maurer	*8,000	
H. W. Peabody & Co.	*17,000	
W. R. Grace & Co.	*70,000	
Various	*39,000	*171,500
JANUARY 10.—By the *President Lincoln*=Hamburg:		
Charles T. Wilson	*8,500	
Rubber & Guayule Agency, Inc.	*8,000	
Various	*3,000	*20,000
JANUARY 10.—By the *Bordeaux*=Havre:		
Michelin Tire Co.		*65,000
JANUARY 13.—By the *Poleric*=Singapore:		
Ed. Maurer	*30,000	
W. R. Grace & Co.	*12,000	
General Rubber Co.	*11,200	
Henderson & Korn	*8,500	
L. Littlejohn & Co.	*11,200	
Hadden & Co.	*6,000	
Various	*45,000	*123,900
JANUARY 13.—By the *Lapland*=Antwerp:		
Meyer & Brown		*118,000
JANUARY 15.—By the *Oceanic*=Southampton:		
Meyer & Brown	*32,000	
W. R. Grace & Co.	*2,000	
Robinson & Co.	*15,000	
Ed. Maurer	*4,500	
W. Stiles	*11,200	
Rubber Trading Co.	*15,000	
Raw Products Co.	*4,500	
Charles T. Wilson	*56,000	
Arnold & Zeiss	*45,000	
Henderson & Korn	*30,000	
Ed. Maurer	*5,500	
Various	*140,000	*360,700
JANUARY 16.—By the *Maryland*=London:		
Meyer & Brown	*30,000	
Johnstone, Whitworth & Co.	*11,200	
Charles T. Wilson	*5,000	
General Rubber Co.	*120,000	
Ed. Boustead & Co.	*12,500	
Various	*36,000	*214,700
JANUARY 16.—By the *Denbigh Hall*=Singapore:		
Meyer & Brown	*67,200	
Henderson & Korn	*25,000	
Arnold & Zeiss	*17,500	
Ed. Maurer	*9,500	
Malaysian Rubber Co.	*1,000	
Ed. Maurer	*7,000	
Ed. Boustead & Co.	*5,000	
Johnstone, Whitworth & Co.	*11,200	
Various	*201,600	*345,000
JANUARY 19.—By the *Minnewaska*=London:		
General Rubber Co.	*115,000	
Charles T. Wilson	*33,500	
Johnstone, Whitworth & Co.	*30,000	
Western Electric Co.	*27,500	
Rubber & Guayule Agency, Inc.	*7,000	
W. R. Grace & Co.	*27,000	
Various	*80,000	*320,000
JANUARY 19.—By the *St. Louis*=Southampton:		
Meyer & Brown	*8,000	
Arnold & Zeiss	*75,000	
Rubber & Guayule Agency, Inc.	*17,000	
Rubber Trading Co.	*3,000	
Charles T. Wilson	*25,000	
Ed. Maurer	*13,500	
Various	*11,200	*132,700
JANUARY 19.—By the *Duala*=Hamburg:		
Various		*7,000
JANUARY 21.—By the *Vaderland*=Antwerp:		
Meyer & Brown	*217,500	
Arnold & Zeiss	*22,500	
Various	*11,200	*251,000
JANUARY 21.—By the *Niagara*=Havre:		
Michelin Tire Co.		*67,000
JANUARY 21.—By the *Noordam*=Amsterdam:		
Arnold & Zeiss	*47,000	
Manhattan Rubber Mfg. Co.	*5,000	
Various	*17,000	*69,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—DECEMBER, 1913.

Imports:	Pounds.	Value.
India-rubber	10,349,927	$5,357,856
Balata	194,304	96,566
Guayule	37,981	23,057
Gutta-percha	99,046	18,808
Gutta-jelutong (Pontianak)	1,453,723	70,610
Total	12,134,981	$5,566,897
Exports:		
India-rubber	39,042	$19,778
Balata	23,343	14,303
Guayule	15,760	6,462
Gutta-percha	6,946	1,090
Reclaimed rubber	57,142	14,736
Rubber scrap, imported	700,869	$53,806
Rubber scrap, exported	398,767	30,249

BOSTON ARRIVALS.

IMPORTS IN DECEMBER, 1913.

	Pounds.	Value.
Gutta-jelutong	68,819	$2,525
Gutta-percha	33,959	4,003
India-rubber	51,443	27,224

COMPARATIVE RUBBER STATISTICS.

	Comparative Rates of Fine Pará. Liverpool.						New York.			Total Exports from Pará. Pará Weights.	Total Imports into the United States. Pará Grades. Excluding Caucho.	Cent. E. I., Af., & Caucho.	Plant. Ceylon.	Guayule.
	s.	d.		s.	d.									
1894	2	9	to	3	1		$0.64½	to	$0.73	18,246 tons	9,453 tons	5,190 tons	.....	.....
1895	3	0½	to	3	4½		.70	to	.81½	20,698 "	9,888 "	6,294 "	.....	.....
1896	3	0½	to	3	8¾		.71	to	.85	21,530 "	9,221 "	5,112 "	.....	.....
1897	3	5	to	3	9		.79½	to	.89	22,630 "	10,491 "	7,180 "	.....	.....
1898	3	7½	to	4	5		.82	to	1.06	21,890 "	9,739 "	8,881 "	.....	.....
1899	3	10	to	4	7¼		.91	to	1.10	25,115 "	12,498 "	10,597 "	.....	.....
1900	3	8½	to	4	9		.83	to	1.11½	26,727 "	11,985 "	8,483 "	.....	.....
1901	3	4	to	3	11½		.76	to	.95	30,296 "	13,142 "	10,066 "	.....	.....
1902	2	10	to	3	9½		.66	to	.92	28,668 "	12,901 "	8,941 "	.....	.....
1903	3	6¾	to	4	8		.78	to	1.13	31,079 "	13,934 "	10,826 "	.....	.....
1904	3	10¾	to	5	6		.89	to	1.32	29,984 "	14,367 "	13,256 "	.....	.....
1905	4	10¾	to	5	8½		1.13	to	1.35	33,913 "	13,881 "	14,754 "	.....	.....
1906	4	11½	to	5	5½		1.16	to	1.28	35,251 "	15,128 "	14,808 "	.....	.....
1907	2	11¾	to	5	3		.69	to	1.24	37,321 "	15,118 "	14,315 "	.....	2,992 tons
1908	2	9¼	to	5	5		.65	to	1.30	38,848 "	17,316 "	12,161 "	.....	3,850 "
1909	4	10	to	9	2		1.13	to	2.15	39,287 "	17,591 "	11,808 "	1,730 tons	8,674 "
1910	4	10	to	12	4½		1.16	to	2.90	37,954 "	14,896 "	14,409 "	3,611 "	10,656 "
1911	3	10	to	7	1		.90	to	1.67	35,936 "	15,892 "	12,640 "	6,556 "	8,091 "
1912	3	11	to	5	2		.93	to	1.22	43,467 "	19,241 "	15,807 "	15,003 "	6,105 "
1913	2	5½	to	4	6¾		.59	to	1.10	39,223 "	15,329 "	9,428 "	23,967 "	2,756 "

CONSUMPTION OF INDIA-RUBBER BY THE UNITED STATES AND CANADA (IN TONS).

[From the Annual Statistical Summary of Meyer & Brown, New York.]

DETAILS.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Imports to United States	20468	23208	21842	24760	27623	28635	29936	29433	29477	31129	32916	35088	50051	48724
Exports to Europe	450	680	430	490	274	357	1625	558	480	681	1340	823	430	298
	20018	22528	21412	24270	27349	28278	28311	28875	28991	30448	31576	34265	49621	48426
Add stock on January 1	712	1198	1399	331	256	305	537	365	606	1553	1332	523	636	605
	20730	23726	22811	24601	27605	28583	28848	29240	29603	32001	32908	34788	50257	49031
Less stock close of year	1198	1399	331	256	305	537	365	606	1553	1332	523	636	605	395
Deliveries to manufacturers	19532	22327	22480	24345	27300	28046	28483	28634	28050	30669	32385	34152	49652	48636

INDIA RUBBER WORLD

Vol. 49. FEBRUARY 1, 1914. No. 5.

TABLE OF CONTENTS.

Editorials:
The Automatic Increase in Rubber Consumption 221
Rubber Literature 221
Prizes to Be Awarded at the London Rubber Exposition. 222
Getting Accurate Rubber Statistics 223
Clearly Libelous 223
What the Rubber Chemists Are Doing 224
Rubber Manufacturing Statistics in the Next Census 224
The Rubber Club's Fifteenth Annual Banquet ..... *Illustrated* 225
Some Neglected Near-By Markets. I—Colombia ..... *Illustrated* 229
New York's Fourteenth Annual Automobile Show ..... *Illustrated* 233
Rubber Trade in Germany and Russia in 1913 236
An Antwerp View of Plantation and Para 236
India Rubber Goods in Commerce 236
Crude Rubber During 1913 237
Some Vigorous Views from Singapore 239
The Editor's Book Table ..... *Illustrated* 240
The Rubber Trade in Boston ..... *By Our Correspondent* 242
Some Interior Views of the Firestone Factory ..... *Illustrated* 243
The Rubber Trade in Akron ..... *By Our Correspondent* 244
The Rubber Trade in Chicago ..... *By Our Correspondent* 244
The Rubber Trade in Rhode Island ..... *By Our Correspondent* 245
The Rubber Trade in San Francisco ..... *By Our Correspondent* 246
The Rubber Trade in Trenton ..... *By Our Correspondent* 247
Foreign Trade Opportunities 248
The India Rubber World Trophy at the London Rubber Show ..... *Illustrated* 248
Rubber Club Gathering Statistics 249
A Few of the Latest Tires ..... *Illustrated* 250
Obituary Record 251
[With Portrait of G. A. Lewis.]
The Famous House of Faber 252
[With Portrait of Eberhard Faber.]
Reduction of Rubber Footwear Prices 252
News of the American Rubber Trade 253
New Machines and Appliances ..... *Illustrated* 258
New Trade Publications 260
Calendars and Souvenirs for 1914 260
New Rubber Goods in the Market 262
Some Rubber Interests in Europe 264
Rubber at the Paris Automobile Salon ..... *Illustrated—By Our Correspondent* 265
The Standardization Committee's Report 267
Rubber Testing at Gross Lichterfelde 267
A German Manufacturer on Rubber Consumption 268
Rubber Notes from Japan ..... *By Our Correspondent* 269
Netherlands Indies Rubber Growers' Association 270
[With Portrait of A. G. N. Swart.]
What Is the Matter with Rubber? 270
Some Rubber Planting Notes 271
Tapping Results in British Guiana ..... *Illustrated* 272
Recent Patents Relating to Rubber 273
[United States. Great Britain. France. Germany. Belgium.]
Review of Crude Rubber Market 276

Antwerp.

RUBBER ARRIVALS FOR DECEMBER.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Nov. 30..*kilos*	546,599	707,545	634,262	568,148	735,616
Arrivals in December—					
Congo sorts	233,492	168,281	321,169	234,673	215,983
Other sorts	8,721	13,294	56,424	30,414	57,985
Plantation sorts	134,363	144,064	73,721	35,616	42,029
Aggregating	923,175	1,033,184	1,085,576	868,851	1,051,613
Sales in December....	363,894	522,124	410,838	280,639	510,101
Stocks, December 31..	559,281	511,060	674,738	588,212	541,512
Arrivals since Jan. 1—					
Congo sorts 2,886,032		3,229,978	3,175,581	3,105,357	3,492,332
Other sorts	120,438	144,585	489,771	399,641	865,349
Plantation sorts 2,033,039		1,402,841	670,461	553,678	328,277
Aggregating 5,039,509		4,777,404	4,335,813	4,058,676	4,685,958
Sales since January 1..4,991,288		4,930,882	4,249,387	4,011,974	4,740,181

RUBBER ARRIVALS FROM THE CONGO.

JANUARY 2.—By the steamer *Anversville*:

Bunge & Co.	(Belgika) *kilos*	2,000	
do	(Comp. Commerciale Congolais)	13,500	
do	(Grand Lacs)	8,600	
do	(Cie du Congo belge)	1,200	
do	(Intertropical)	13,400	
do		2,700	
Société Coloniale Anversoise	(Soc. franc. du H. C.)	22,735	
do	(H. C.)	23,980	
do	(Comminière))	18,100	
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde S. A.)	(Kasai)	67,000	
do	(Comfina)	22,600	
do	(Crevelde)	12,700	
Charles Dethier	(American Congo Cy)	5,027	
Willaert Frères		4,000	217,542

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to December 22, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain.....*pounds*	7,377,602	14,590,452
To United States	4,267,949	5,745,870
To Belgium	1,178,666	3,699,438
To Australia	232,386	453,993
To Germany	195,138	364,971
To Austria	73,660	31,434
To Japan	68,415	286,069
To Canada	22,078	.....
To France	11,568	15,682
To Italy	6,378	44,754
To Russia	2,288	101,116
To Holland	2,282	992
To India	700	1,881
To Norway and Sweden	39	.....
To Straits Settlements	.....	146,147
Total 13,439,149		25,482,799

(Same period, 1911, 6,112,722; same period, 1910, 3,074,783.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 2,383,758 pounds—1,797,179 pounds from the Straits and 586,579 pounds from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

[From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.]

To—	Singapore, Dec. 16.	Penang, Nov. 30.	Port Swetenham, Dec. 21.	Total.
Great Britain...*pounds*	19,511,595	13,838,133	23,336,727	56,686,455
Continent	308,116	157,333	2,996,319	3,461,768
Japan	1,020,790	.....	.....	1,020,790
Ceylon	122,851	316,267	1,353,005	1,792,123
United States	5,653,565	247,867	.....	5,901,432
Australia	104,526	.....	.....	104,526
Total	26,721,443	14,559,600	27,686,051	68,967,094
Same period, 1912...	14,372,067	8,655,764	19,281,051	42,308,882
Same period, 1911...	6,635,618	4,547,062	11,505,738	22,688,418
Same period, 1910...	3,707,599	2,234,569	8,008,578	13,950,746